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LA
1924

Goulstonian Lectures

ON SOME

WASTING DISORDERS OF EARLY INFANCY.

Delivered before the Royal College of Physicians of London

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LECTURE I.

Delivered on March 25th, 1924.

THE subject which I wish to bring to your notice is lacking in general interest and by many regarded as threadbare, but although much has been written on the subject of the wasting disorders of childhood, its problems are far from being completely solved, and the death-rate from these disorders remains very high. Dr. Goulston, in bequeathing by his will £200 to the College of Physicians to purchase a rent charge for the maintenance of an annual lecture stipulated, amongst other conditions, that if possible a dead body should be procured, and in the deed conveying the rent charge to the College it is stated that the dead body should be dissected as the President and Elects should think necessary for the diseases to be treated of. Unfortunately there would be little difficulty in procuring the dead body of a child who had suffered from a wasting disorder, but in the majority of the cases which I wish to discuss the dissection of the body would yield very little information about the diseases treated of.

The group of wasting disorders which I have studied is made up of those cases which, when seen by the physician, frequently prompt the question: "Is this patient suffering from pyloric stenosis"? The clinical picture is that of a wasted infant whose age can be measured in weeks rather than in months, and whose history is that, although normal at birth, the baby has later failed to put on weight normally; it has wasted, and probably has suffered from vomiting, and in many cases also from constipation or diarrhœa. As far as possible I have limited my investigations to infants under three months, but some have been made upon infants up to six months of age. The period of life chosen is that of *la première enfance* of French writers, and almost exactly corresponds with the age-incidence of the cases of athrepsia described by Parrot.

The subject naturally divides itself into two main subdivisions—simple atrophy or marasmus, and infantile pyloric stenosis—although it has not been found advantageous, particularly in chemical investigations, rigidly to separate the consideration of the two groups.

SIMPLE ATROPHY OR MARASMUS.

I will deal first with simple (or infantile) atrophy or marasmus (athrepsia, severe infantile malnutrition, advanced nutritional disorders of infancy, &c.). On clinical grounds only it is quite impossible to say at what point in its downward course a wasting infant becomes an atrophic one. Talbot[1] has shown that there is no appreciable change in the metabolism of these infants until there is a loss of 20 per cent. of the body-weight. I have therefore adopted as a working rule that an infant can be regarded as suffering from simple atrophy if the body-weight is less than 80 per cent. of the expected body-weight for its age, and if there is no other evidence of disease. To come to any conclusions as to the cause of atrophy it is essential to review at considerable length the literature on the subject; to examine carefully both the theories put forward and the criticisms of them, and in some instances to attempt to prove or disprove some of the experimental data on which these theories are based.

Literature.

In this review of the literature I have briefly indicated the view held by older writers. The honour, if it be such, of introducing the term marasmus into medicine is given to Soranio, a physician of Aragon, who, writing on this subject in the year 1600, states that the expression "infantile atrophy" was used in Greek medicine. A few years previously (1583) Hieronymus Mercurialis, an Italian physician, and a teacher in the schools of Padua and Bologna, published a treatise, "De Morbis Puerorum," in which, according to Marfan,[2] infantile atrophy is described under the term Macies, and the statement made that the condition was called by the Greeks *ισχνοτης, λεπτοτης*, and by the Romans macies, macilentia, gracilitas, tenuitas, macritudo.

The earliest reference to this disorder by any English writer that I have been able to find is in a small book published a few years after the Goulstonian lectures were founded. This book bears the title:—

> "A Treatise of the Diseases of Children with their Causes, Signs, Prognosticks and Cures, for the benefit of such as do not understand the Latine Tongue, and very useful for all such as are Householders and have Children. By Robert Pemell, Practitioner in Physick at Cranebrooke in Kent May the 29 1653."

The book contains a chapter headed Of the Consumption or Leaness of the Rickets. Pemell dismisses the "leaness of the rickets" by saying that a full description of it has recently been published by three London doctors, but he deals at greater length with the consumption; thus he says:—

> "Children do many times wax lean without any manifest cause, and although they suck much or feed well yet they are not therewith nourished. Now the causes are many: as the corruption of the milk for being either too hot or too cold, it turns into ill humours and so hinders the breeding of good blood; or it may come for want of suck, from whence we see many times that when a child consumes and pines away with sucking one nurse, if it sucks another it soon thrives and grows . . . If the child consume for want of milk or a good nurse this may be cured by getting a better nurse . . . The consumption in most children is dangerous if it be not taken in time and kills many." His treatment is refreshingly simple. "If the fault be in the milk that must be rectified by good dyet of the Nurse, or if that do not help, then the Nurse is to be changed."

A few years later (1659) appeared "De Morbis Puerorum" by James Primrose. This book contained a description of infantile atrophy under the heading Macies, and some of the statements contained therein suggest that he was not unfamiliar with Pemell's book. Another book of about the same period, on the Diseases of Children, was "habited in English," as the author puts it, at "Oundle in Northamptonshire" in June, 1662. I cannot give the author's name, because in the only copy I have seen the title-page of the book is missing, and in a dedicatory letter to Sir Robert Boyle the writer signs only his initials "J. S." Under the heading Of the Consumption, he says, "A consumption is called leaness, gracility and tenuity." He describes various conditions, but one of them is undoubtedly marasmus, thus:—

> "In children it is caused for the most part by the defect of nourishment, being either too little or vitious, and unuseful, proceeding from the fault of the milk." He suggests other ætiological factors—e.g., "It is also conceived that children by reason of the softness and tenderness of their body, grow lean and consume by fascination, proceeding from their touching unhealthy bodies, or the unwholesome vapours out of the eyes or mouthes of women not well, which truly is not fascination, for witchcraft is rather the work of the devil than by any power of the sages."

He gives Mercurialis and Primrose in his list of authorities, and the above quotation savours as much of Primrose as some of Primrose's statements savour of Pemell.

Eighteenth-Century Conceptions.

In 1689 Walter Harris published his book, " De Morbis Acutis Infantum." Harris was Lumleian lecturer from 1710 until his death in 1732, and his book appears to have become the standard work on children's disease in this country for many years, the last edition being part of Martyn's " A Full View of all the Diseases of Children," published in 1742. I have been unable to find any reference to marasmus in this work, although he describes a condition which he calls " atrophia verminosa."

A very good description of infantile atrophy is given by Dr. John Astruc in his " Treatise on all the Diseases Incident to Children," published in England in 1746. The chapter in which he describes the condition is headed, Of the Extenuation or Decay of Children. About a hundred years after Harris wrote his book, Michael Underwood published his " Treatise on the Diseases of Children." This book ran through many editions from 1784 to 1827, and succeeded that of Harris as the standard text-book. Like many other authors of this period Underwood confused tuberculous peritonitis with marasmus. When writing of " a confirmed hectic fever and marasmus, or a wasting of the whole body, called by some writers atrophia lactentium," he describes enlargement and suppuration of the mesenteric glands, but he clearly recognises the condition thus:

> " There is indeed an atrophy or universal decay in infants for want of the breast, or from the unsuitableness of it (which is the true atrophia lactentium), or of whatever else may be the child's ordinary food, but this is not usually attended with fever. . . . Harris recounts some remarkable recoveries in what he calls the atrophia verminosa (or worm hectic), . . . but I have seen none so marvellous as in the atrophic dententium or tooth atrophy."

In another passage he states that macies of ancient writers is " a true atrophy or marasmus."

In 1830 Dr. John Darwell, physician to the General Hospital, Birmingham, wrote a small book having the title " Plain Instructions for the Management of Infants with Practical Observations on the Disorders Incident to Children." In an article on Marasmus he says:—

> " This term which in its original significance meant nothing more than emaciation we now understand as a general expression for infantile fever. It is almost always the consequence of improper diet or regimen, or is a sequela of the exanthematous diseases."

He then proceeds to give post-mortem findings, which are those of tuberculous peritonitis and general tuberculosis. This may be taken as representing general opinion in this country, until Dr. Charles West's " Lectures on the Diseases of Infancy and Childhood," first published in book form in 1848. In these lectures Dr. West clearly differentiates infantile atrophy as a nutritional disorder, although stating that it may occur in a child who is weakened by previous disease or the subject of general tuberculous disease. He shows how insufficient and unsuitable food produces the condition.

> " Death takes place from starvation; its approach indeed having been slower, but the suffering which preceded it not therefore less, than if all food had been withheld."

In his book on the " Wasting Diseases of Children," first edition published 1868, under the heading of Simple Atrophy, Eustace Smith also well describes the clinical picture and obviously regards the condition as a " vice of nutrition." The same view of some cases was, of course, taken by Parrot in 1875.

The frequent occurrence of diarrhœa and vomiting in these children naturally led to a great deal of attention being paid to the alimentary canal, and attempts were made to classify wasting disorders on a basis of morbid anatomy. In 1879 Bouchut[3] criticised his fellow countryman Parrot very adversely for introducing the new name " athrepsia " into science, and stated categorically " athrepsia is enterocolitis." There is little reference to atrophy and marasmus in many text-books of diseases of children published about this time. Indeed, in some these terms do not appear, but many pages are devoted to acute and chronic gastritis, enteritis, gastro-enteritis, &c. The morbid anatomy theory reached its zenith in the Vienna School under Wiederhofer in 1880, and in Germany under Baginsky in 1884. The theory, however, failed when it was found that there were not any constant lesions, and that many of the appearances found were due to post-mortem changes. The unsatisfying nature of post-mortem examinations is well known to all who have performed autopsies in these cases.

A little later, in 1885, Escherich, in Vienna, investigated the bacteriology of the intestine and its contents under normal and pathological conditions. Although a bacteriological explanation of atrophy was not given, an explanation of the often associated diarrhœa was advanced, and he established the fact that the type of bacteria in the intestine depended on the kind of food given. From this time until the beginning of the twentieth century, most pediatrists seem to have halted between Charles West's and Eustace Smith's view that atrophy was due to starvation, and the view that there were morbid changes in the alimentary tract, which were the cause of atrophy. Not a few indeed seem to have tried to hold both views at the same time. Eustace Smith regarded the starvation as due to insufficient food, and also to unsuitable food, and he thought that difficulty in digesting protein was the cause of atrophy occurring in children who were fed on cow's milk. This doctrine of the harmfulness of protein of cow's milk, first enunciated by Biedert in 1869, had a considerable vogue, and, indeed, until recent times the presence of curds in the stools was regarded as due to undigested protein. This theory was never seriously challenged until the researches of Czerny and his colleagues.

The Work of Czerny.

Since the beginning of the present century a great amount of research work on nutritional disorders has been carried out by German workers, particularly by Czerny and by Finkelstein. According to Czerny[4] atrophy is not a disease per se but a disturbance in growth and in general nutrition, which is the result of nutritional disturbances, or of infective processes or both. As a result of these conditions infants do not invariably become atrophic; the reason some become atrophic and others do not is due to a constitutional anomaly. Children who do become atrophic are either suffering from the " exudative diathesis," or are the children of " neuropathic and psychopathic parents," and show extreme nervous irritability of the intestinal tract, or are children with the " hydriopic " constitution—i.e., children who show differences in salt and water retention from normal children.

Czerny's classification is as follows:—

1. Disturbances from food: (*a*) Milchnährschaden; (*b*) mehlnährschaden; (*c*) infantile scurvy.
2. Disturbances from infectious processes: (*a*) Acute disturbances; (*b*) enteral infections; (*c*) parenteral infections.
3. Disturbances from constitutional anomalies: (*a*) Exudative diathesis; (*b*) rickets; (*c*) anæmia; (*d*) neuropathic constitution.
4. Disturbances produced by congenital malformation.

The two important food disturbances which concern us are what he describes as Milchnährschaden and Mehlnährschaden.

Milchnährschaden.—This disturbance is due to over-feeding with milk, and the particular factor causing the injury is the fat in the milk; it therefore may be called Fettnährschaden. The clinical characteristics of this over-feeding with fat are failure to gain weight, constipation, with passage of pale dry crumbly soap stools, pallor, and flabbiness. Czerny's[4] view in 1912, five years after the appearance of his text book on infant nutrition, was expressed as follows:—

> " At the present time only so much can be said in regard to the food components, that it is the fat that must be restricted in the treatment of atrophy, and that the place of this must be taken by carbohydrates."

He did not believe in the use of cream in infant feeding.

Mehlnährschaden.—This disturbance is due to feeding on a diet containing too much carbohydrate (frequently starch). Such a diet not infrequently is deficient in fat and protein—e.g., a weak sweetened condensed milk mixture. The baby is markedly wasted; the stools are often frequent, usually acid, green, and watery, with a variable amount of mucus and small whitish curd masses. Occasionally the wasting is masked by œdema (hypertrophic form).

Protein, according to Czerny, never causes any upset; he does not admit any such thing as "protein injury." The curds found in infants' stools are nearly always fat and very rarely protein curds, and the factor in the production of atrophy is the difficulty in dealing with fat. He assumes that these children have a low assimilative power for fat, and as a result of fermentation and digestion fatty acids are formed in excess in the intestinal tract. To neutralise these fatty acids, alkalies are taken from the tissues and excreted into the intestine and lost in the stool. In constipation with soap stools, calcium, and in diarrhœa, potassium and sodium are thus excreted. Demineralisation of the body is the essential cause of atrophy.

> "On account of this mineral loss it is assumed that the cell structure and tissue composition is altered, and that if a sufficient loss takes place, the normal cell function will be so disturbed that the building up of new tissue is impossible, even if the processes in the intestinal tract are restored to normal."[illegible]

This theory was based on results obtained by Keller and Steinitz. Keller[6] in 1897 found a considerable increase in the urinary ammonia in 10 out of 11 infants suffering from acute and chronic gastro-intestinal disturbances, and in 1903 Steinitz[7] found that the urinary ammonia was increased by giving a large amount of fat in the food, at the same time there was an increased loss of alkali by the intestine, and a corresponding diminished loss in the urine. Both this experimental work and Czerny's theory have been criticised considerably, and the conclusions refuted by Pfaundler,[8] Meyer and Langstein,[9] and Utheim.[5]

The latter observer found that, although there is a high excretion of ammonia in the urine, it is proportionate to the amount of organic acids in the urine, which acids she found occurred in atrophic infants, and infants suffering from acute diarrhœa. With a great increase in the fat of the diet there is, however, only a small increase in the excretion of organic acid and ammonia, and she assumes that the source of the organic acids is a disordered metabolism of the body cells.

Observations made by Miss Hickmans and myself, to which I refer later, agree with those of Utheim, that increase in the amount of fat in the diet produces little increase in the ammonia, and also agree with Holt, Courtney and Fales,[10] and with Hutchison,[11] that many atrophic infants do not have a low assimilative power for fat. Czerny's work was, however, of the very greatest importance because, for the first time, he emphasised the importance of the consideration of the baby as a whole, and not simply of his food or his alimentary canal. The other great advance made by him was the demonstration of the harmlessness of protein.

The Work of Finkelstein.

Finkelstein published a classification of nutritional disorders in his text-book in 1912, which has had a considerable vogue on the Continent and in America, and has been adopted to some extent in this country (John Thomson, Dingwall-Fordyce). As will be seen it is largely a clinical classification. With Czerny, fat was the factor, but according to Finkelstein the sugar and salts are to blame. He based this view largely on the whey exchange experiments of Meyer.[12] In these experiments Meyer showed that when curd of cows' milk was mixed with whey of human milk the mixture was well tolerated, whereas when curd of human milk was mixed with whey of cows' milk the mixture was badly tolerated. These experiments, which were only few in number, have been repeated and disproved by Lichtenstein and Lindberg.[13]

According to Finkelstein the whey salts may injure the intestinal mucosa and interfere with its activity by decreasing the normal secretion, depressing the antibacterial function of the cells, and thus allowing the growth of bacteria which produce sugar fermentation. The injured mucous membrane allows the passage of harmful substances, lactose and salts into the circulation, and is itself liable to bacterial infection. The somewhat zigzag character of the weight chart in bottle-fed babies he regarded as due to variations in the salt content of the whey. He found[26] that the giving of 100 c.cm. of 12·5 per cent. lactose solutions to infants with intestinal disorders produced fever and nutritional disturbances. Other sugar and salts produced the same results, as also did lactose and salt when given intravenously. He also found that the giving of tea, or even water alone, caused the fever to disappear entirely. The fever that occurs in alimentary intoxication he regards therefore as "salt" and "sugar fever," and in his opinion it is due to injury to cells by the physico-chemical effect of the sugar or salt. In his view, the rapid loss of weight in atrophy can only be explained by a pathological loss of water. He assumes that the water combining power of the different cells of the body has been lost, and that as the result of the lack of retention of water there is a lack of retention of nitrogen and alkali.

Balcar, Sansum, and Woodyatt,[14] in examining Finkelstein's results, point out that the solutions used by him were strongly hypertonic, and quote their own experiments, which show that hypertonic solutions of crystalloids, which do not burn in the body (sodium chloride, sodium bicarbonate solutions were used), cause fever, diuresis, and dehydration, whilst isotonic solutions do not cause any of these symptoms. These observers showed that when sugar was injected intravenously, sufficiently in excess of the tolerance limit to produce marked glycosuria and diuresis, and when the rate of water administration was less than the rate of diuresis, for a period long enough to cause the loss of a certain weight by dehydration, fever was produced. They also found, as Finkelstein did, that the fever subsided when additional water was given. They point out that in cases where lactose was used every gram of lactose was recoverable unchanged from the urine, and they conclude that "sugar and salt fever" in infants is caused by dehydration and does not arise from injuries to cells.

In pursuance of his view, that the whey salts and sugar fermentation are the factors in nutritional disturbances, Finkelstein devised a special milk modification to combat this fermentation. This modification is the well known protein milk, which has a high protein, but a low sugar content. Like Czerny he also stressed the importance of the baby: "It is the sick baby we have to study, not the diseased bowel." His classification is based on the study of the weight chart.

Bilanzstörung.—In Bilanzstörung (disturbance of balance—failure to gain) the previously normal chart with a steady rise is replaced by one showing a straight line. This is the type of case described by Czerny as Milchnährschaden; in it there is diminished tolerance for fat, due, according to Finkelstein, to derangement of the relations of metabolism of carbohydrates to the fat. He aims at bringing about the normal fermentation in the bowel and the production of acid instead of alkaline soapy stools. He does so by reducing the amount of milk and adding cane sugar, maltose or starch.

Dyspepsia.—The weight curve turns slowly downwards, but there is no great loss of weight; it is the milder form of sugar fermentation, the commencement of diminished tolerance for carbohydrate. The children are fretful, and there may be slight attacks of diarrhœa. Less fermentable carbohydrates, like dextrimaltose, may be tolerated, but in the worst cases Finkelstein advised using his protein milk. If this condition does not improve the infant passes into one of the two following categories, which of the two may depend on the food; if the food contains much sugar and little fat, the tendency is to intoxication; if little sugar and more or less plentiful fat, the tendency is towards decomposition.

Alimentary Decomposition.—The weight chart shows a slow, steady fall, the condition being that of marasmus or atrophy.

Alimentary Intoxication.—Here the fall is rapid and accompanied by considerable diarrhœa, an irregular temperature, respiratory and cerebral disturbance; in its worst form this is cholerine, or cholera infantum. The condition is not due to a bacterial infection, but due, as previously stated, to the passage of whey salts through the unhealthy mucous membrane into the general circulation.

Recent Work in Britain and America.

Within recent years a great amount of work on metabolism in atrophic infants and the pathogenesis of infantile atrophy has been carried out in America. I would mention particularly L. E. Holt[*] and his co-workers, Marriott, Utheim, Morse, Talbot, &c. Important contributions have also been made by the Glasgow school, in particular by Fleming, Hutchison, Guy, and Telfer.

According to Marriott,[15] atrophy is essentially the result of partial starvation, continued for long periods of time. There is a negative mineral salt balance, and in fully developed cases of atrophy there may also be a negative nitrogen balance, showing that there is destruction of the body tissues.

> "There is diminished functional capacity of the body to oxidise organic material, and the basal energy metabolism of athreptic infants is often high as compared with those who are normal. The destruction of body substance is not confined to the solid portions of the organism, but affects the blood as well. There is a diminution in blood protein, a destruction of blood corpuscles, and a decrease in the total blood volume, resulting in a diminished blood flow, which brings about a lowering of the functional capacity of all parts of the body. When the blood flow is increased there is a return of normal function."

The well-known clinical fact, that atrophic infants may have a stationary weight for a long period, despite a fairly large intake of fluid, is probably due to this being a "period of repair," during which the functional capacity of the body for utilising food is returning. From animal experiments it would appear that the restoration of blood volume is occurring during this period.

Marriott believes that one of the chief reasons why atrophy develops on cow's milk feeding, and not on breast milk, lies in the different buffer values of the two milks. There is little difference between their acidity value. According to Clark and Lubs,[16] pH for human milk is 7·0 to 7·2, and for cow's milk 6·6 to 6·8, but the alkali reserve (buffer value) of cow's milk is much greater, for it takes three to six times the amount of added decinormal hydrochloric acid to bring cow's milk up to the same acidity as breast milk, to which a certain quantity of decinormal hydrochloric acid has been added. The buffer value of cow's milk may be lowered by diluting with water, adding carbohydrate, or by artificially souring the milk by lactic acid organisms, or by the addition of hydrochloric acid. Protein milk also has a lower buffer value. Marriott's classification is as follows:—

Acute conditions: (1) Acute diarrhœa; (2) anhydræmia.
Chronic conditions: (1) Hypothrepsia; (2) athrepsia.

In a comprehensive series of papers on infantile atrophy, Nobécourt[17] introduces a simple classification. He recognises two clinical syndromes, hypotrophy and cachexia. Each of the two syndromes is subdivided into (1) essential or protopathic, and (2) secondary or symptomatic. The ætiological factors in his essential group are the health of the mother during pregnancy, her previous medical history and habits, position in social scale, &c., and also what Czerny has described as the constitutional factor; the ætiological factors of his symptomatic group are the infections, vomiting, gastro-intestinal infections, and defective feeding. This last factor includes unsatisfactory food, under-feeding, and over-feeding. Marfan[illegible] also adopts a similar simple classification. He divides infantile atrophy into hypothrepsia and athrepsia, and says that the cause of these conditions can be classified under three heads: (1) defective food; (2) affections of the digestive tract; and (3) infections. At the present time, general opinion seems to be divided between the views of those who, like Nobécourt and Marfan, adopt a simple clinical classification, and the views of Finkelstein and Czerny, with the adoption of Finkelstein's classification rather than Czerny's.

I think it is a fair statement to make that the larger body of opinion favours the views of the former group. The experimental evidence on which many of Finkelstein's and Czerny's views have been based have, as stated previously, been seriously challenged. Actually in practice many of the cases met with cannot, in my opinion, be classified into Czerny's groups, although carbohydrate indigestion not infrequently presents symptoms similar to those described by him under the heading of Mehlnährschaden. It is quite true that, using the weight chart as a basis of classification, it can be divided up as Finkelstein has shown, but the associated clinical characteristics described by him do not always manifest themselves.

There can be no doubt, I think, that carbohydrate and fat "intolerance" or indigestion do occur, and that such groups can be separated at times, but they are not a sufficient explanation of all the simple atrophies of infancy. I think, also, that a case, whilst still atrophic, may show carbohydrate indigestion at one time and fat indigestion at another, or even a combination of both.

I hesitate to add another to the already long list of classifications, and a sentence from a recent review on one of the leading text-books of children's diseases comes forcibly to my memory:—

> "Disease of the gastro-intestinal tract is an open field; his classification will not please many more people than the author."

Personal Classification.—My classification is not very different from some of those I have quoted, but it has enabled me to label my cases. I do not differentiate between degrees of atrophy, because there can be no strict dividing line between moderate and severe atrophy, but before a child is considered atrophic it must be more than 20 per cent. under the expected weight for a child of that age.

1. Simple atrophy.
2. Simple atrophy with dyspepsia: (*a*) diarrhœa and vomiting; (*b*) fat indigestion; (*c*) carbohydrate indigestion; (*d*) protein indigestion; (*e*) pylorospasm.
3. Simple atrophy from deprivation (avitamoses): (1) absence of fat (dystrophia alipogenetica), frequently also associated with excess of carbohydrate (dystrophia amylogenetica) and often insufficient protein; (2) absence of antiscorbutic and antineuritic vitamins.
4. Atrophy associated with other diseases or infections. Pyloric stenosis and other deformities. Pyelitis, otitis media, syphilis, tubercle, broncho-pneumonia, acute epidemic diarrhœa, &c.

Ætiology.

To an even greater degree than rheumatism or tuberculosis infantile atrophy is a "social disease," and cases seen in hospital practice far outnumber those seen in private practice. This is, of course, a widely recognised fact, but it is very well demonstrated by consideration of the geographical distribution of fatal cases throughout the city of Birmingham. This city has a configuration not unlike that of Ireland, and the municipal wards can be divided into three groups: a central group, most densely populated and containing the largest number of slums and back-to-back houses, an outer group of wards which comprises the outlying suburbs, the least densely populated part of the city, and having many large open spaces, and a middle group of wards intermediate in type. In the years 1912–16 the infantile mortality-rate for "atrophy, debility and marasmus" for the whole city was 16·88 per 1000 births; the rate for the central group of wards was two and a half times the rate for the outer groups, the figure being 25·57 and 10·05 respectively, whilst for the middle groups of wards it was 13·72 per 1000 births. The heading "atrophy, debility, and marasmus" probably includes cases that should not be included under these headings; nevertheless, the figures do give a very good idea of the distribution of infantile atrophy, and show that where poverty and squalor exist atrophy is much more common than where children are brought up under better conditions. In general, the ætiological factors concerned in the prevention of atrophy are well known, but to enable my cases to be compared with those of other writers I have analysed these factors in 100 cases, under the age of 6 months, admitted into the municipal infants' hospital during the period 1920–24.

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[*] It is with very great regret that I have read of the recent death of Dr. Holt in China. His name and work are freely quoted in these lectures, and I would like to express my admiration of him and of the quality of his work. He was, indeed, one of the greatest pædiatricians in the world and in common with his own countrymen we shall miss him sorely.

Prenatal Factors.—Only eight of the mothers had followed any occupation other than that of housework during the period of pregnancy. Thirty-two, however, gave a history of previous ill-health, 11 were said to have suffered from "anæmia," and four from "debility," four from "rheumatism," two from pulmonary tuberculosis, two from bronchitis, three from "fits," and one each from heart disease, kidney disease, sarcoma, uterine hæmorrhage, abscess of uterus, and vaginal discharge. One mother died from tuberculous meningitis 14 days after the birth of the baby. Of the fathers, five gave a history of pulmonary tuberculosis, and one of mental disease. In the family history of the patient there had been in five families deaths from marasmus; in five families deaths from "fits"; stillbirths had also occurred in five families and miscarriages in 11. Of the babies 12 were twins; in most cases both twins were admitted to hospital; in other cases one twin was atrophic and the other a normal child, although fed in the same manner. One child of triplets was admitted; three only were illegitimate children. The place in the family is an interesting point; 68 per cent. of the cases were either first, second, or third in the family, the figures for each year being practically identical.

Feeding.—Two cases only had been fed entirely on the breast, but a considerable portion had been partially breast-fed. The number of completely artificially fed babies was 19. In the cases where artificial feeding had been given either throughout life, or to supplement or replace the breast, 34 had been fed on one artificial food only, 30 on two, and 21 on three different foods. Smaller numbers only had received more than three different forms. Further analysis of the feeding presents other points of interest. The choice of type of food in children fed on one and two forms of artificial food are here tabulated:—

	One food.	Two foods.		One food.	Two foods.
Cow's milk ..	20	27	Nestlé's ..	1	11
Glaxo	8	12	Cow and Gate	1	7
Trufood	2	4	Various ..	—	6
Allenburys ..	2	3			

From the literature it would appear that machine-skimmed sweetened condensed milk is a much more important ætiological factor in the United States and on the Continent than in Birmingham, but in estimating the value of the preceding tables it should be noted that in nearly every case the infant was sent into hospital from an infant welfare centre, and that, therefore, cow's milk and the dried milks are more likely to have been used than if the parents of the children had not sought advice.

A history of diarrhœa was given in 19 cases, and of vomiting in 72, in 54 of which vomiting was said to have been of frequent occurrence; constipation occurred in 46 cases. After admission vomiting occurred in 40 cases, and diarrhœa in 27 cases; a larger number than this, however, suffered from looseness of the bowels.

THE METABOLISM OF FATS IN INFANTILE ATROPHY AND FAT INDIGESTION.

The obvious loss of fat by atrophic children, the description of Milchnährschaden by Czerny and his colleagues and their insistence on the importance of "fat injury," have led to much research on the digestion and absorption of fats in these children. Amongst the most important contributions to the subject of fat metabolism in infants I would again mention Hutchison working at Glasgow, Holt, Courtney and Fales at New York, and Utheim at St. Louis. The suggestion has been made within the last year or two that fat digestion in pyloric stenosis is defective.[18] This point has been discussed and disproved in a recent paper by Barling and myself.[19] I do not know of any observations on fat absorption in pyloric stenosis, but if Marriott's view that "athrepsia is essentially starvation" be correct, then metabolism experiments should yield similar results in atrophy and in pyloric stenosis, in which the wasting is unquestionably due to starvation.

This consideration—together with the fact that the work of these investigators would be even more valuable if confirmatory results could be obtained by what I think are more rigid methods—determined me to carry out a series of metabolism experiments. Utheim [5] examined the fat absorption in 13 atrophic infants on 20 different occasions. In 11 of the experiments the period for which the case remained under observation was five days. In four experiments the period was four days. In the other five experiments the period was two days or less. It is better, I think, to delete these five experiments in arriving at the final result. She does not say how the fat intake was estimated.

Hutchison,[11] likewise, does not give any information as to how the fat intake was estimated, nor does he say if the figures obtained were from one 24-hour specimen nor whether the experiment was carried out over a period of days. He examined 22 normal and 22 athreptic infants; the ages of the children are not stated. The most extensive series of experiments, however, are those by Holt, Courtney, and Fales.[10] They examined breast- and artificially-fed children. In the series of children fed on modifications of cow's milk, 128 specimens of fæces were examined from 77 infants, whose ages ranged from 2 to 18 months; 53 of these cases were infants under the age of 6 months, and therefore more strictly comparable with my series. Except for the cases having diarrhœa at the time of the experiments, the greater number were not ill, although the digestion of some was not normal and some subsequently developed diarrhœa. None of my cases at the time of observation was suffering from severe diarrhœa, and therefore I propose to eliminate that group of cases, when comparing them with my own. The actual figures obtained by these workers I will give later on. In three quarters of the cases the stools examined were collected for a definite period; the actual length of time is not stated, but in a letter sent to Findlay, Paton, and Sharpe [20] Holt says:

> "In most of the cases the values reported are averages for two or three days, frequently for longer periods. The values for infants are mostly for three and four day periods . . ."

In fat metabolism experiments it would seem advisable as far as possible that the following conditions should be observed: (1) That the actual fat intake of the food should be known; (2) that the stools examined should be those resulting from this food; (3) That the stools should be examined for a considerable period, at least five days.

The time occupied by food passing through the alimentary canal in infants is variable; it varies to some extent with the character of the food; it obviously varies according to the presence of diarrhœa or constipation, but it also probably varies with the condition of the child, for it has been shown by test meals that in some cases of atrophy the stomach empties very rapidly. Variot[24] quotes Chahnet's observations that in children under 1 month carmine given with the food appears in the stools in less than two and a half hours, and is present in the stool up to eight hours after ingestion; and that in a child of 2 years, fed on sterilised milk, the periods are four and nine hours respectively. That these figures cannot be relied upon for metabolism purposes is proved by observing the time taken for barium to traverse the intestinal tract. In a series of cases of atrophic infants in which this has been done (Dr. C. G. Teall), the time required for the elimination of all the barium from the intestinal tract has varied from eight hours to three days. To make quite certain that the stool examined is one from a known fat intake, the fat in the food is estimated for three days before estimation of fat content of stool is undertaken. The method which I have adopted, and this method is used in all metabolism experiments, whether fat, protein, calcium, &c., is as follows:—

The experiment lasts over a period of eight days, during which period the feed is unchanged. For the first five or six days the fat intake is estimated every 24 hours. To do this, half an ounce of every feed is set aside during each period of 24 hours, and the actual amount taken at a feed is noted. At the end of the third 24 hours, the child is put on a metabolism bed for five days, during this time the whole of the stools (and in many cases the urine also) is collected, and each 24 hours collection of stool is dried and the fat estimated. The mean of all the 24 hours estimations of fat content of the feeds is taken as the fat intake; and the mean of the stool estimations as the fat output.

This method, I think, fulfils the essentials I have laid down. The chemical investigations have all been carried out for me in the biochemical department of the Children's Hospital by Miss E. M. Hickmans, M.Sc. Birm., to whom I am very greatly indebted.

There are probably many criticisms that can be made of our results, but two obvious ones can be met. The first is that drying the stools may alter the total fat, or the distribution of the fat in the stools. Holt, Courtney, and Fales, however, showed in their work, that, although the soap content of the acid stools of breast-fed infants is increased by drying, nevertheless in the stools of children fed on cow's milk, neither the total fat nor the distribution of the fat was affected. They, however, say that this distinction may not hold good in the case of acid diarrhœal stools, but such stools were not included in my series of cases.

The second criticism is that fæcal fat cannot be regarded as unabsorbed food fat only. In a recent paper Hill and Bloor[21] conclude, as a result of experiments on cats, that fat is to be found in the fæces, whether it is present in the food or not, and that fat in the food increases fæcal fat, but only to a comparatively small extent. These results, they think, favour the idea of a fat excretion from the intestine. Such a possibility must be admitted, but if fat excretion occurs in infants, the amount of fat excreted can only be very small, and is, indeed, negligible, for Holt found in a breast-fed infant an absorption of 99·2 per cent. of fat, and in an infant fed on cow's milk an absorption of 97·4 per cent. In our own experiments we have found an almost identical figure—namely, 97·7 per cent.—in an atrophic child fed on a mixture of cow's milk and skimmed cow's milk. In our experiments 398 stools were examined from 63 children, who were under treatment for infantile atrophy or pyloric stenosis. In some instances the same child was examined for more than one period, the actual number of children investigated being 51. In some of the cases every stool was examined, but in the majority 24 hours' specimens, as previously described.

Hutchison states that the fat output in the fæces varies directly with the fæcal weight, and forms approximately one-third of this. By fæcal weight he means the weight of the dried fæces. Holt, *et alia*, were not able to confirm this, their average figure was 34·5 per cent., but in children not exceeding six months old it was 37·5 per cent. of dried fæces, and the percentage varied from 11·2 to 82·6. Our results confirm their findings, and the average works out remarkably close to this figure, being 37·26 per cent., the actual percentages varying from 11·5 to 63·5. An average figure, however, where there are such extreme variations is of little value. As a general rule, the percentage of fat in the fæces varies directly with the percentage of fat in the food. Fat splitting throughout the series is good, and in two cases only did the neutral fat form more than 20 per cent. of the total fat. In Holt's series cleavage was always good, except in cases of diarrhœa, in which a large amount of unsplit fat was passed, in some cases forming 60 per cent. of the total fat in stools. This large increase in unsplit fat is presumably due to the rapid passage of food through the intestine. Several authors (Reeve-Ramsay,[22] Rosenstern,[23] Gray and Reynolds,[18] &c.) have suggested that in atrophy and pyloric stenosis there is weakening or diminution of the digestive ferments, and particularly of lipase. The results of the present series of experiments, and of former observations in pyloric stenosis, show that neither in atrophy nor pyloric stenosis is there any evidence of deficiency of pancreatic lipase.

Fat Absorption.

The average absorption from 43 observations in atrophic children gives a figure of 86·4 per cent., the lowest figure being 55·8 per cent. and the highest 97·7 per cent. If cases of pyloric stenosis after the Rammstedt operation are included, the average figure is unaltered. The table shows how this figure compares with other recent observations.

Hutchison: 73·5 per cent.

Utheim: 77 per cent. in all cases; 78 per cent. for cases which were observed over four and five-day periods.

Holt: 78·4 per cent. for all cases up to six months, excluding diarrhœa and severe diarrhœa; 81·1 per cent. for all cases up to six months in which digestion was not quite normal, but who were not suffering from diarrhœa; 88·6 per cent. in all cases—i.e., including children over six months, but excluding diarrhœa.

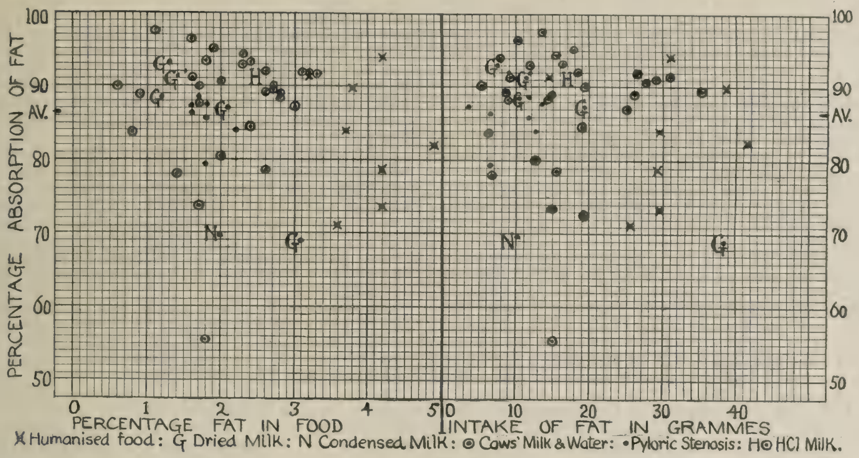
Distribution of Fat in Stools and Absorption of Fat on Different Dietaries.

Food.	Weight D.F.	% total fat.	Distribution % total fat.			Per 24 hours.			% absorption.
			Sap.	Free F.A.	Neutral fat.	Intake.	Output.	Absorbed.	
Dried humanised milk	10·2	47·4	67·2	23·4	9·4	30·0	5·1	24·9	73·9
Full cream dried milk	13·7	48·8	63·9	23·6	12·3	28·9	7·2	21·7	78·1
Half cream dried milk	2·6	26·4	82·3	9·1	0·9	9·9	0·7	9·2	91·0
Condensed milk	4·8	52·1	73·2	21·1	5·8	10·2	3·1	7·1	69·8
Milk, water, and lactose	—	41·2	73·2	14·9	14·4	—	—	—	—
Milk, water, and sucrose	5·8	37·6	71·3	22·6	6·1	20·6	2·2	18·9	89·2
Milk, water, and HCl	3·7	39·2	88·0	6·3	5·6	18·5	1·5	17·0	92·1
Milk, water, and D.M.	5·6	38·1	70·7	24·7	4·7	18·0	2·2	14·4	85·8
Skimmed milk .	4·9	15·4	81·5	10·0	8·5	8·6	0·7	7·9	90·4
(Pyloric stenosis)	3·8	32·7	77·8	15·7	5·8	11·2	1·3	8·5	86·5
Average (63 cases)	6·1	37·3	73·1	19·9	7·2	18·1	2·5	16·0	86·4

It is interesting to compare the percentage absorptions on different dietaries and with varying fat intake. Unfortunately the number of cases in some sections is a small one, but certain deductions seem justifiable. With the exception of one case fed on a condensed milk mixture, the lowest percentage absorptions are found with a dried humanised milk and a full cream dried milk. The highest percentage absorptions are found with hydrochloric acid milk (one case), a half-cream dried milk, and skimmed milk mixtures.

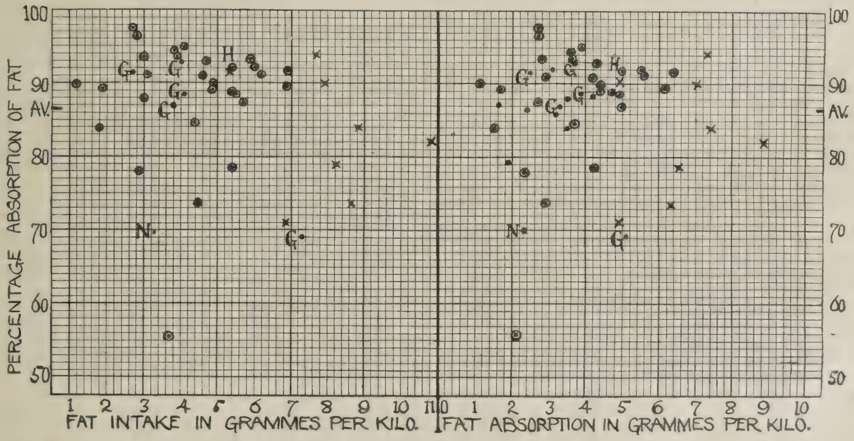
I am quite unable to account for the low percentage absorption and high total fat in dried fæces in the case of the child on condensed milk. The stool showed one of the highest figures for free fatty acid (36·8 per cent. of total fat) in the series. According to Holt the free fatty acid in diarrhœal stools is over 30 per cent. of total fat, yet this child did not have diarrhœa. The milk was sweetened condensed milk, containing 2 per cent. fat, but I know of no observations which, in the absence of diarrhœa, show a diminished fat absorption when the sugar intake is large. The stools were semi-formed and showed some fat curds. It is true that over the period of the experiment the child lost 3¾ oz., but in a subsequent experiment 4 oz. were lost; during this experiment the child was fed on a skim milk mixture (0·8 per cent. fat), and showed an absorption of 83·9 per cent. The stools were still semi-formed, but the free fatty acid averaged only 14·6 per cent. of total fat, and the percentage of fat in dried fæces was 13.

CHART 1. CHART 2.



I have not any figures for normal children, but Hutchison states that the average for his series was 89·7 per cent.; he does not, however, say whether they were artificially or breast fed, which is a point of considerable importance. For definitely normal children under six months fed on cow's milk modifications Holt's figures are 87·7 per cent. Comparing these figures with my own, it is quite obvious that fat absorption (in the absence of diarrhœa) is normal in infantile atrophy and pyloric stenosis.

CHART 3. CHART 4.



In the series of graphs the figures for percentage absorption have been compared with—(*a*) the percentage of fat in the food (Chart 1); (*b*) the amount in grammes of the fat intake (Chart 2); (*c*) the amount in grammes of fat intake per kilo of body-weight (Chart 3); and (*d*) the amount in grammes of the fat absorption per kilo of body-weight. (Chart 4.) From the graphs it is seen (1) that atrophic children show very good absorption figures for cow's milk modifications up to 3·3 per cent. of fat, a fat intake of 36 g. in 24 hours, or 7 g. per kilo of body-weight in the 24 hours; (2) that absorption figures for modifications of *dried* cow's milk are also good where the percentage of fat is 2·1 or less, the intake 20 g. or less, or 4·8 g. fat or less per kilo of body-weight in 24 hours; (3) that if modifications of dried cow's milk show higher fat values than this the absorption figures are nothing like so good (although in one case with a high fat percentage and intake the absorption figure was a very good one), and the weight of the dried fæces is higher.

Despite the fact that the digestion is normal (as shown by the figures for neutral fat), it appears, therefore, that there is much greater difficulty in absorption of fat when high fat content dried milk mixtures are used than when modifications of cow's milk are used. It is noteworthy that even with this difficulty in absorption the amount of fat in grams absorbed per kilo of body-weight may reach a very high value.

From these results I have come to the conclusion that high fat content dried milks are not economical foods from a fat standpoint, and although most of the children investigated put on weight when fed by this method (many doing very well), it seems reasonable to assume that the giving of an uneconomical food places a strain on the child's resources, which may well lead to what Finkelstein has called an "intolerance for fat." With the exception of one case, this is the nearest approach to Milchnährschaden, or intolerance for fat, that I have seen in my series of cases. The clinical experience of many observers, that half-cream dried milks produce better results than whole-cream dried milks, agrees with the above findings. The difficulty in fat absorption may possibly be associated with some alteration in fat emulsification, which occurs in the manufacture of dried milks, although it must be pointed out that of the two brands quoted, one is prepared by the spray system, by which it is stated that the emulsification is unaltered, and the other by the roller system. The criticism may be made that the dried humanised milk, to which I have referred, should not show a very high fat content; we have, however, found that this milk, used in the dilutions recommended by the manufacturers, always shows a high fat content.

The exceptional case to which I have just referred was apparently typical of Bilanzstörung (Finkelstein), or Milchnährschaden (Czerny). This child was an atrophic one, and lost 4½ oz. during the time of the experiment. He passed large white stools, which on drying gave a very high percentage of total fat and contained a large proportion of fatty acid; fat splitting was normal, but the fat absorption was the lowest in the series, being 55·8 per cent. The stools became somewhat less bulky when skimmed milk was given, but the loss in weight continued, and improvement did not occur until an ordinary milk mixture, containing ½ gr. of citric acid to the ounce, was given. On this the child gained weight, and the stools, although remaining pale, became normal in size. I would once more emphasise the rarity of this condition; it is the only one in our series, and was one of the last cases examined.

The findings of Holt and Fales[24] on fat requirements of children are interesting for comparison with our results. They state that healthy nursing children require 20 g. of fat daily, increasing to 40 g. at 6–7 months, or 4 g. per kilo of body-weight daily, but that infants fed on cow's milk should have smaller amounts than these; no actual figures, however, are given. The ideal fat intake according to Galbraith[25] is 18 g. daily in the first, rising to 28 g. in the seventh month. These values are calculated on the assumption that the breast milk contains 3·25 per cent. of fat. Our results show that many atrophic children fed on cow's milk can split larger amounts of fat, and also show that larger amounts than those stated, even by Holt and Fales, can actually be absorbed.

The presence of fat and soap curds in the stool is not certain evidence of fat indigestion; for in all cases where they have been observed, without diarrhœa, fat splitting has been normal and absorption satisfactory. The same remarks apply to the soap stool, which stool is in my experience not an abnormal one. Indeed, I am quite satisfied with the condition and prognosis in cases showing such stools, and I have not found the associated symptoms of Bilanzstörung in these cases. When, however, the soap stool is a very bulky one, as in some cases fed on high fat content dried milks, and in those very rare cases similar to the one I have just described, there may be, as already stated, diminished fat absorption.

From what has been said, it appears that fat indigestion occurs in infantile atrophy under two conditions: (1) When diarrhœa develops. In these cases as a result of peristaltic hurry, rapid passage through the intestine occurs, and fat splitting may be poor. (2) When high fat content dried milks are given. In these cases fat splitting is always good, the stool is a large one, and contains much soap and free fatty acid.

The treatment of artificially fed children in the first of these groups consists in putting them on a low fat dietary, and giving them carbohydrate in the form of one of the less fermentable sugars—e.g., dextrimaltose. The low fat dietary can be obtained by giving them skim milk, or a mixture of skim and whole milk; at times a condensed sweetened milk, diluted so as to give a low fat content, is found very useful, or one of the artificial foods used in the same manner. Protein milk has also proved valuable on occasions. When the diarrhœa improves, the fat content should be increased again, until the child is on a normal milk mixture.

A short preliminary period of starvation is often useful in these cases, particularly if the onset of diarrhœa is sudden (or possibly infective), but many children are so enfeebled that they are unable to stand this treatment. The treatment of the second group consists in giving a lower fat content dried milk, or substituting an ordinary cow's milk mixture for the dried milk.

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ESSEX PUBLIC MEDICAL SERVICE.—The Essex Public Medical Service, which was recently formed to provide medical attendance and medicine for persons unable to pay the ordinary medical charges, has made a successful start in the county. Certain medical men have shown enthusiasm in its promotion, while local committees have been formed in many areas of the county.

THE PANCREAS AND DIABETIC METABOLISM.

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I AM prompted to the following communication by the renewed interest in the nature and metabolism of diabetes mellitus which has received a strong stimulus by the discovery of "insulin," and further, by recently published observations of Geelmuyden on the formation of carbohydrate in the animal organism and on intermediary metabolism in diabetes mellitus. Geelmuyden's findings and conclusions fit so remarkably with those of Milne and Peters made in my laboratories in New York some years ago (1912),[1] that I think it worth while to draw renewed attention to them, especially as they did not attract at that time the consideration which, I think, they deserved.

Objections to Prevalent Beliefs Concerning Insulin.

The prevalent belief to-day seems to be that insulin is a secretion of the islands of Langerhans—hence the name "insulin"—and that it furnishes something which "aids in the burning of the blood-sugar." Both of these ideas, it seems to me, stand on a very insecure and, as I believe, erroneous basis.

The first contention—that the islands of Langerhans are a secretory unit for the purpose of an internal secretion—is supported by the following considerations: (*a*) Acceptance of morphological independence of the islands; (*b*) certain changes in the pancreas resulting from the tying of its duct; (*c*) specific staining properties of island cells; (*d*) evidence that in Elasmobranch and Teleostean fishes islands occur in independent locations removed from the main portion of the pancreas, and that insulin has been recovered from them; (*e*) certain older pathological evidence which placed essential diabetic lesions into the islands.

Against all of these considerations much may be said, but I shall be content to point out here what seem to me some of the most important objections.

The islands are not wholly independent structures which are simply carried by, and embedded in, the pancreas. Thus, the pancreas differs decidedly from the suprarenal glands in which two genetically different units have fused. The islands are embryologically derived from the same cell elements as the rest of the parenchyma, and they are particularly abundant in the embryonic and evolving pancreas. They can, by serial sections, be shown to have intimate connexion with the pancreatic parenchyma and even with the ducts, and indeed the resemblance to ducts and their intimate connexion with old ducts in certain pathological cases is most striking. Moreover, they cannot during certain phases of normal regression, but particularly in the abnormal, atrophic pancreas, strictly be separated from pancreatic parenchyma. Thus, also, in older subjects groups of acini may again take on the appearance of islands and typical acinar cells, and transition to acinar arrangement are sometimes seen in islands. Again, island cells or even groups of cells occur connected to other cells in pancreatic acini. Further, in pancreatic reductions from whatever causes (senility, emaciation, essential atrophy) there appear quite definite transition pictures. In advanced cases of this sort islands have thus largely disappeared without leaving any morphological evidence of destructive loss, such as a scar, or of degenerative changes in island cells. On the contrary, in general pancreatic atrophy island cells are often noted to become more numerous, larger, their connexions with parenchyma more intimate, without definite lines of demarcation, and in tinctorial qualities and arrangement they approach acinar or duct cells. This perplexing loss of islands by "evaporation," without leaving other morphological evidences of the mechanism of their disappearance than transitions to parenchyma, becomes thus intelligible. It is in these cases often impossible to demonstrate exactly where acinar tissue ends and islands commence, and numerous islands or duct cells appear in acini, while acinar cells are to be seen in islands. The conclusion, therefore, is strongly suggested, particularly by pathological material which has the advantage of throwing certain pancreatic changes and cell relations into greater relief, that the islands are an integral part of the pancreas, interchangeable with the parenchyma. The islands appear therefore as a phase in the constant morphological fluidity of the pancreas and consequently are an important feature of normal and pathological life of the organ.

These conclusions were reached by Milne and Peters, in conformity with findings of other authors, years ago, and continued investigations of a large number of normal organs representing different ages and evolutionary changes, combined with evidence from diabetic cases, have only strengthened my convictions in this respect. (In parenthesis it may be stated that I consider the diseased human pancreas, by exaggerating certain of these changes and morphological pictures, a more valuable source of information than the normal pancreas of lower animals.)

Experimental Cirrhotic Atrophy.

But now the experimental cirrhotic atrophy of the pancreas after ligature of its duct throws additional doubt on the independence of the islands, instead of supporting it. It is true that after ligature of the duct there occurs an extensive cirrhotic loss of pancreatic substance, and ultimately only solid clumps of cells remain embedded in fibrous tissue. These isolated clumps of remaining cells have at times the appearance of islands, but it is possible in many instances to trace the formation of such apparent islands through various stages back to atrophying acinar cells. Thus, also, it is possible to see in the earlier stages of this experimental pancreatic atrophy in the dog parenchymatous nodules still plainly visible, but at the edge of these there appear small pale cells. These may resemble the normal islands of the dog, but may generally be traced to some connexion with acini. I have, and so have others, made very similar observations in human cirrhosis of the pancreas. In other words, certain identification of islands as old persistent structures in a new cirrhotic environment is not possible, as old remaining parenchymatous nodules may take on this appearance and thus simulate islands.[2]

Identification of Islands by Staining.

There remains the identification of islands by specially designed staining methods (Bensley, Lane, Kirkbride, Jackson, &c.). This method seems to work well in some normal lower animals when immediate fixation is possible. But it is not applicable to all animals with equal surety, as shown by Milne and Peters, and it is entirely unconvincing in the abnormal pancreas and quite impossible to apply to pathological human cases. And I have learned that it is, especially in pathological cases, safer to depend upon general morphological appearances than upon complicated staining reactions of granular contents. That applies to other tissues as well.[3] But even if we admit that island cells have specific staining qualities, nothing else is indicated thereby except what we already know—i.e., that morphologically they differ from ordinary acinar cells. It does not, in any way, establish their structural and functional independence or invalidate the observations on transitions.[4] Indeed, the latest observations of Jackson on the islands of Elasmobranch and Teleostean fishes demonstrate their direct genetic relation to pancreatic ducts, although Jackson claims for them independence from parenchyma. The findings on insulin yields from these islands in fishes which carry them independently from the main part of the parenchyma, it would seem, have lost much value since insulin has been so generally found in other glands and tissues of the body. Indeed, some observers lean now toward the view that the pancreas is a "store-house for insulin."

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[1] L. S. Milne and H. Le B. Peters: Atrophy of the Pancreas after Occlusion of the Pancreatic Duct, Jour. Med. Research, Boston, July 3rd, 1912, xxvi., 405. Same authors: Observations of the Glycolytic Power of the Blood and Tissues in Normal and Diabetic Conditions, ibid., 415.

[2] The pancreas follows in this respect similar changes in other glandular organs, when put into new (cirrhotic) environment, and it is necessary to retain only a very small amount of parenchyma (a nodule not larger than a pea) to prevent diabetes.

[3] Thus, Waugh has lately demonstrated in these laboratories that the oxidase reaction of myeloplasts varies under pathological conditions, and that this depends not only upon the degree of differentiation, but upon other, as yet obscure, variations from the normal cell type.

Pathological Evidence of Island Change in Diabetes.

Finally, when we come to the older pathological evidence of island changes in diabetes, which were at one time highly regarded as indicating their independent functional position, it must, I think, be admitted that sufficient evidence has now accumulated to throw considerable doubt on such changes in relation to diabetes. In the first place, observations by Reitmann, and further by Milne and Peters, have shown hyaline changes very similar to those in diabetes in non-diabetics, especially older persons or cachectics. Milne and Peters observed such hyaline changes in pancreatic acini of normal animals, which then resembled hyaline islands very closely. Reitmann regards focal hyaline degenerations as secondary consequences to cachexias or supervening infections to which diabetics are eminently liable (for example, tuberculosis, with hyaline or amyloid degenerations). According to my own observations such hyaline islands or foci are frequently found in diabetics with subsequent tuberculosis. They commence, very much like amyloid, with a capillary hyaline swelling. Whether such "islands" are always the Langerhans cell complex, or simply detached parts of parenchyma, cannot always be stated with certainty.

The evidence here presented indicates that the independent anatomical and functional position of the islands is not established beyond doubt, but to the contrary, rests on an uncertain basis. For these reasons certain investigators—notably von Hansemann, Herxheimer, Reitmann, and myself—recognise the importance of the pancreas in its relation to metabolism, not in a particular secretion of the islands of Langerhans, but in activity of the whole organ. Reference has already been made to the instability or fluidity of the whole pancreas, of which the islands are an indication and a phase. In fact, the whole pancreas is, as investigations of Reitmann, Anderson, and myself have demonstrated, in constant regression and progression. The pancreas resembles in this respect other important organs notably of internal secretion.[5] Atrophy, degeneration, collapse of acinar cells, and of whole acini are normal performances in the pancreas, and they are, under normal conditions, almost immediately compensated for by regenerative events. Thus the normal pancreas presents constant, sometimes quite extensive and varied pictures in loss and reconstruction of secretory parenchyma and architectural arrangement. This, as I have pointed out elsewhere, is of great pathogenic importance. For, while normally these two groups of processes—the regressive and the progressive—proceed side by side in orderly physiological balance, they may become upset and, by exaggeration or inhibition of one or the other, lead to pathological states. In this manner develops, in my opinion, the essential atrophy of the pancreas which is more commonly to be found in severe diabetes of the young than the cirrhotic (inflammatory) atrophy.[6]

Glycolytic Power of Blood and Tissues in Normal and Diabetic Conditions.

Prompted by their morphological investigations, which threw doubt on the independent structural and functional standing of the islands, Milne and Peters were led to continue their researches into certain experimental observations on the glycolytic power of the blood and tissues in normal and diabetic conditions. They found that the tissues in pancreatic diabetes could utilise dextrose, while the blood serum of depancreatised dogs possessed a marked diastatic action on glycogen, converting it into sugar, which action was increased, sometimes markedly, above the normal. Taking into consideration further that the glycogen contents in tissues are generally reduced in diabetics, they concluded that the disease would seem to depend on an excessive production of glucose from glycogen. This increased production may be the result of a failure of secretion of an anti-diastatic enzyme, or, it seems more probable, due to the action of accumulated substances in the serum which normally should be destroyed or altered by the pancreas. These substances increase slightly the diastatic power of the serum, but their chief action is more likely in the direction of causing the tissue cells to convert their store of glycogen into glucose. As an analogous process it is not unlike what in certain conditions occurs in the fat metabolism of cells. In all forms of diabetes, then, either as the result of pancreatectomy, ether, sugar puncture of the brain, or phloridizin, there is a rapid diminution of glycogen in the tissues. This is associated with an increased formation of glucose, at times considerable, and resulting in hyperglycæmia and glycosuria. The ability to form glycogen, however, still remains, so that new glycogen may continually be produced. This increased conversion of glycogen into glucose may be considered as due to the direct action of certain substances, such as phloridizin, ether, or products retained in the serum by pancreatic insufficiency, which increase the diastatic power in the blood serum, or act on the tissue cells so that they rapidly convert their store of glycogen into sugar." Thus Milne and Peters expressed themselves in 1912, basing their remarks on morphological and experimental investigations.

From this standpoint the recent observations by Geelmuyden on carbohydrate formation in the animal body and on the intermediary metabolism of diabetes appear of particular interest.[7] For Geelmuyden, quite in ignorance of the previous work of Milne and Peters, and by very different methods, has arrived at the conclusion that in diabetes occurs a hyperproduction of sugar from fats and proteids, and this he attributes to the uncontrolled action of adrenalin.[8] He interprets the beneficial effects of insulin as due to an inhibition, or at least to a decrease, in the sugar conversion. Thus, also, he explains the rise of the respiratory quotient after the administration of insulin, not by an increased burning of sugar, but as due to a retardation or cessation in the formation of carbohydrate from proteins and fats. In other words, he also believes that the pancreas "regulates" the action of adrenalin, that is, the conversion of glycogen and fat into sugar. If this step is omitted in the intermediary metabolism, hyperglycæmia and glycosuria result.

I am well aware that certain recent experimental investigations into the action of insulin such as by Bissinger, Lesser, and Zipf in frogs, and Noble and McLeod in the turtle, and some others argue rather against the views expressed by Geelmuyden as regards the antagonistic rôle of adrenalin and insulin in intermediary metabolism. But here it must be remembered that these observations were done with isolated organs (livers) of cold-blooded animals and are in contradiction to other observations, especially those of McLeod and Banting and their co-workers, who found a decided increase of glycogen and a corresponding decrease in fat in diabetes.[9] On the other hand, it appears from observations of Büchner and Grafe, and of Staub, that the action of insulin is so complicated and general that we are as yet far from fathoming its real relations to intermediary sugar metabolism. However that may be, all these investigations only indicate further the uncertainty and lack of fundamental knowledge in the action of insulin and nothing in these observations supports the view that "insulin" is an internal secretion of the islands of Langerhans. On the contrary, Büchner and Grafe's investigation point towards insulin action as a general cell function.

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[4] I take these so-called "independent islands" to be only phases in the gradual phylogenetic condensation of the, at first, diffuse pancreatic substance to a localised organ.

[5] Reitmann: Beiträge zur Path. der menschlichen Bauchspeicheldrüse, Zeitschr. f. Heilkunde (Abt. Path. Anat.), 1905, xxvi., 1. Oertel: Post-natal Development and Path. Organ Reconstruction, Amer. Jour. Med. Sci., 1921, vol. clxi., 5, p. 694.

[6] Oertel, H.: The Essential Atrophy of the Pancreas, Jour. Med. Res., Boston, 1919, xl., 3; On Certain Changes in the Pancreas in Diabetes Mellitus, Sci. Reports of the Royal Victoria Hospital, 1916, Series B, 1, 155. Oertel and Anderson: Regressive and Progressive Changes in Pancreas, ibid., p. 163.

[7] Geelmuyden, H. Chr.: Die Neubildung von Kohlenhydrat im Tierkörper. Ergebnisse der Physiologie, 1923, Bd. 21, i., 274; Über den intermediären Stoffwechsel beim Diabetes Mellitus, Klin. Woch., 1923, ii., p. 1677.

[8] I consider it possible that other organs of internal secretion, like the thyroid, may also be here concerned.

I think sufficient evidence has been produced to show that there is at present still a reasonable uncertainty in the exact mechanism of the relationship of the pancreas to sugar metabolism. In my opinion, there exists enough morphological as well as experimental evidence, of which I have personal knowledge and in which I have faith, to question the independence of the islands and the conception of them as organs of internal secretion which are essential for the combustion of sugar.

NOTES ON A SMALL OUTBREAK OF TYPHUS FEVER IN ENGLAND.

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IT is well known that there constantly exists a risk of the importation of typhus fever into this country by way of the great ports. This risk was especially marked during the years immediately following the end of the war, when the disease was epidemic in Poland and Russia, and when there was constant movement of refugees from infected areas. It was the fortune of Birkenhead to experience such a visitation in March, 1922. The disease was presumably introduced from abroad; we were, however, unable to trace the actual mode of entry—one of the chief difficulties in this connexion being that the first cases were not recognised and did not come under our notice until some five weeks after the onset of symptoms, and then only because further cases were occurring.

On March 29th nine patients were admitted to the Birkenhead Infectious Diseases Hospital, suspected to be suffering from typhus. Seven of the patients were removed from the Birkenhead Poor-law Infirmary at Tranmere, where they had been under treatment for varying periods. Two of these were convalescents, having been in hospital 30 and 20 days respectively; the remainder were recent cases—one had been in hospital four days, two two days, and two one day. Of the other two patients, one had been presented for admission at the Poor-law infirmary on March 29th, after the other cases had been removed, and was sent on to the infectious diseases hospital. The other was taken direct from her home. The two convalescent cases, admitted to the Poor-law infirmary at a time when an influenza wave was at its height, had been dealt with as cases of that disease, several of their symptoms being suggestive. It had been recognised, however, that certain unusual features were present; and with the appearance from the same or neighbouring houses of fresh cases which showed a similar clinical picture the suspicion was aroused that some other infectious disease of a specific character was being handled, and the medical officer of health was communicated with. The cases were seen in consultation with Dr. G. J. French, the medical superintendent of the Poor-law infirmary, on the evening of Tuesday, March 28th, and were removed to the infectious diseases hospital on the following day. A short observation of the patients in the infectious diseases hospital, particularly of the two most recent cases, confirmed the suspicion that they were suffering from typhus fever; and further corroboration followed when a positive reaction to the Weil-Felix test was obtained.

The history of two other patients who had been admitted to the Poor-law infirmary on Feb. 28th and March 2nd, and who had died there on March 6th and 7th respectively, leaves little doubt that they succumbed to the same disease. Finally, a boy of 4 years of age, a son of one of the above cases, who was admitted to the reception ward at the infectious diseases hospital for quarantine on March 31st, developed symptoms of typhus on April 7th, having been infected prior to admission. The total number of recognised cases was, therefore, 12. It would be unreasonable, however, to expect that this represents in its totality the extent of the outbreak, and that no cases escaped identification.

Particulars of the 12 cases are shown in Table I.:—

TABLE I.—*Typhus Cases: Age, Sex, &c.*

Case No.	Init.	Age.	Sex.	Probable date of onset.	Admission to—		Result.
					P.L. hosp.	I.D. hosp.	
1	M.L.	32	F.	20/2	27/2	29/3	Recovered.
2	T.O.	18	M.	23/2	28/2	—	Died 6/3/22.
3	H.O.	53	F.	23/2	2/3	—	Died 7/3/22.
4	I.O.	24	F.	2/3	9/3	29/3	Recovered.
5	J.O.	52	M.	20/3	27/3	29/3	,,
6	L.O.	20	F.	23/3	27/3	29/3	,,
7	J.O.	28	M.	23/3	28/3	29/3	,,
8	W.O.	24	M.	27/3	28/3	29/3	Died 12/4/22.
9	M.R.	31	F.	23/3	—	29/3	Recovered.
10	M.R.	44	F.	19/3	25/3	29/3	,,
11	C.D.	44	F.	23/3	—	29/3	,,
12*	J.R.	4	M.	7/4	—	7/4	,,

* Developed disease while in reception ward, to which he was admitted on March 31st.

Clinical Features.—The clinical features of the ten patients treated at the infectious diseases hospital differed considerably. It might, in fact, be said that among this comparatively small number all types of cases were seen, from the mild case which, had it not been for the history and the diagnostic tests applied, would certainly have escaped detection, to the severe form resulting in a fatal issue. One outstanding feature given in the history of all the patients was *headache*, generally coming on suddenly and in a severe form. Other symptoms were not so constant. The cases may be classed as follows:—

Convalescent (no symptoms of disease on admission to infectious diseases hospital) (Cases 1 and 4) ..	2
Mild (Cases 9 and 12)	2
Moderate severity (Cases 5 and 6)	2
Severe (Cases 7, 8, 10, and 11)	4

The individual cases, however, showed such differences that it will be best to describe each separately.

CASE 1.—Female aged 32. Took ill Feb. 20th, 1922. Headache, sore-throat; went to bed at once. Admitted to Poor-law infirmary (P.L.I.) on the 27th, but does not remember this. On admission to infectious diseases hospital (I.D.H.) she was not complaining; appeared in ordinary health, gave a faint positive diazo-reaction [1] and presented no other features of clinical interest. Discharged recovered on April 13th.

CASE 4.—Female aged 24. Took ill Feb. 23rd, suddenly, in a shop, went "light-headed," kept on feet for a week, went to bed on March 2nd, feeling "ill all over" and having pains in the chest. On admission to I.D.H. was not complaining, and beyond a faint positive diazo-reaction, which persisted for four days after admission, there were no features of clinical interest. Discharged recovered on April 13th.

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[9] The diverse and conflicting observations in this regard suggest that different animal species may have a different carbohydrate metabolism.

[1] A doubtful reaction. In Table II. only quite definite positive findings have been entered as "positive" and doubtful ones regarded as "negative."

CASE 5.—Male aged 52. Took ill March 18th, complaining then of pains in head and back, shivering, cough. Pains spread all over and "couldn't get out of bed." Was treated at home for a week and admitted to P.L.I. on the 27th. On admission to I.D.H. on the 29th looked ill, was complaining of headache and cough, and had some expectoration. T. 102·2°, P. 96. Evidence of arterio-sclerosis; slight bronchitic signs throughout the chest, slightly deaf, dazed and rather resentful of questions. One or two indefinite spots on the back but no real rash. Diazo-reaction positive. Remained in much the same state, chest symptoms being prominent, till April 2nd, when there was a sudden improvement, the patient seeming better in every way. The next day he not only demanded food vigorously, but was most anxious to get up. After this crisis he rapidly improved and convalescence was uneventful. Discharged recovered on the 27th.

CASE 6.—Female aged 20. Took ill on March 23rd, when she complained of headache, swollen glands in neck, and a pain in the right shoulder. Took to bed on the 25th feeling much weaker and worse in every way. Admitted P.L.I. on the 27th and I.D.H. on the 29th. On admission mentally quite clear, complaining of headache, sore neck, weakness, and cough. On examination no rash was seen. Diazo-reaction brilliantly positive; patient looked ill, under-nourished, and anæmic. T. 102·4°, P. 100. Headache and cough persisted for a few days, but by April 4th patient definitely improving, practically convalescent by the 6th. On the 7th complained of pain in left calf, which was tender on palpation, and the whole leg markedly swollen—a diagnosis of popliteal thrombosis was made. This complication cleared up after about a week, when the patient made a good recovery. Discharged recovered on May 9th.

CASE 7.—Male aged 28. Took ill on March 21st with shivering, cough, and headache. On admission to I.D.H. on the 29th complained of "being sore all over," but could not give a connected account of how he felt, as he was distinctly delirious—a low muttering stupor. Obviously ill; a cough, markedly dilated pupils, tongue furred; a definite general rash, profuse on trunk, more marked on back than on chest and abdomen, well marked on legs and arms, forearms showing fewest spots. Face blotchy but showed no spots. Individual spots at this stage resembled those of enteric. Two days later the rash was even more marked, fresh enteric-like spots appeared, and in addition deeper subcuticular spots were showing up well, giving the skin a distinctly mottled appearance. During this time patient was very ill. Delirium continued, and the bowels were rather loose, tremor of lips and hands noted. On April 6th rash began to fade and there was a distinct improvement in general condition—the patient being clear mentally and complaining of hunger for the first time. Next day the improvement was maintained and the patient was practically convalescent. The change, in a day or two, from a profoundly ill to an almost well man was very striking. No special features of interest during convalescence. Patient was discharged recovered on the 27th.

CASE 8.—Male aged 24. History given by patient was that of waking up on March 25th with headache, cough, pains all over, and a shivering attack. He was up during the next two days, but felt ill all the time. On the 28th he took his brother (Case No. 7) up to the P.L.I. and, it being noticed that he was ill, he was detained there. On admission to I.D.H. he was complaining of intense headache, cough, and pains in back and hips. Although he was obviously ill, his mental condition was clear. Slight deafness. T. 104·2°, P. 96. Brilliant diazo. Well-marked rash on sides of neck and trunk (most profuse on back). Spots noted on arms, none on legs. Individual spots small, lenticular, slightly raised, pinkish papules not unlike enteric. None seen on face. Next day patient much the same, but rash markedly petechial on right forearm, being obviously brought out by application of tourniquet for vein-puncture on the previous day. On April 2nd rash still more marked, and subcuticular elements were made out, the distribution remaining as before. On the 3rd patient's condition worse; he still complained chiefly of headache and was markedly cyanosed. Restless and delirious at times. Next day much worse, semi-conscious, restless, more cyanosed; constant hiccough. Rash well marked. He continued much in this state for several days, mental condition very confused, with struggling, muttering, and shivering fits. On the 8th rash still very marked and fresh spots noted on arms; general condition as before. On the 10th, as his condition was getting desperate, it was decided to give him whole blood intramuscular injections from a typhus convalescent—adopting the technique used with success by Zingher in cases of toxic scarlet fever. The donor was his father (Case 5), then in the twenty-fourth day of disease and the tenth of his convalescence; 125 c.cm. of whole blood were transferred—the temperature fell to normal within 12 hours (? artificial crisis), but there was no real improvement in the other symptoms. On the 11th he was still very ill, but more drowsy and not so restless. He died on the 12th.

CASE 9.—Female aged 30. On March 22nd this patient complained of severe headache and went to bed—the only other symptom complained of was some stiffness in all joints. On admission to I.D.H. (on the 29th) she still had some headache but otherwise did not complain. Face flushed and tongue furred. She was 7½ months pregnant. Diazo positive. There was an indefinite rash present consisting of a few papules on the chest and rather more on the back—under normal conditions they would hardly have attracted attention. She slept well and showed no further symptoms during the next few days. By April 6th temperature was normal and patient convalescent. Discharged, recovered, on the 27th.

CASE 10.—Female aged 44. Patient too ill to give any definite history. She was in P.L.I. from Jan. 30th to March 4th, suffering from pneumonia. Returned home on the 4th and took ill again on the 19th, when she collapsed, had severe headache and malaise. Readmitted to P.L.I. on the 25th and on that date was stated to have had a rash. On admission to the I.D.H. on the 29th she was very ill and exhausted, too weak to speak and with rapid respirations. A few spots on the abdomen and chest and rather more on the back—none noted on limbs. T. 100°, P. 129. Diazo brilliantly positive. This patient lay in an absolutely exhausted state until April 6th, when she showed signs of more life and gradually began to pick up strength. Discharged, recovered, on the 27th.

CASE 11.—Female aged 44. This patient took ill on March 23rd when she suddenly began to vomit, had pains all over and a severe headache. On admission to I.D.H. on the 29th she only complained of a "thick feeling in the throat." Face flushed and somewhat bloated. Distinct deafness, pink conjunctivæ, and small pupils. Cough. Slightly cyanosed. T. 100·2°, P. 116. Diazo brilliantly positive. Well-marked rash on chest, abdomen, back, and upper arm; most profuse on back; none on legs. Elements were somewhat large and persisted after pressure—subcuticular mottling well seen—i.e., spots resembling faint indefinite petechiæ. Patient dull, stupid, and obviously ill. On March 31st rash definitely petechial on forearms, particularly so on right side, where tourniquet had been applied; also a few petechial spots on legs; stools loose and light yellow. For three days this patient was acutely ill—marked rash with the subcuticular element very obvious, dusky red face, red eyes, small pupils, tremors, stupid, deaf, muttering. On April 4th she showed a distinct improvement and smiled for the first time. The rash was beginning to fade. Steadily improved, but on the 11th (twentieth day of disease) she developed a left otorrhœa. This gave rise to no trouble, and was dry within a week, after which she made an uneventful recovery. Discharged, recovered, on the 27th.

CASE 12.—Male aged 4. A son of Case 9. Admitted to reception ward 8 on March 31st together with other typhus contacts. On April 7th had temperature of 100·8°, was fretful, and there was a definite rash on the trunk and limbs. Spots widely separated, resembled enteric spots, and very distinct. Constitutional symptoms slight. He was transferred to the typhus ward. The diazo-reaction was strongly positive. The next day the rash was more profuse, though the elements were not so distinct, this being due to the development of subcuticular mottling. Both trunk and limbs were involved—it was most marked on buttocks, more on back than front and more on legs than arms. Throat slightly congested and tongue slightly furred, mucous membranes of mouth were clear and shiny, face blotchy and showing a slight tremor. Slight cough; child still fretful though not really ill. Sleeping and eating well. No further symptoms. Rash began to fade on the 9th, and gone by the 12th. Uneventful convalescence. Discharged, recovered, on May 9th.

Diagnostic Features.

The difficulties in the way of the early diagnosis of a disease with which few practitioners in this country have had any practical acquaintance are, naturally, very great. At the same time, once it was recognised that it might be typhus we were dealing with, the diagnostic difficulties became very much less. Once typhus was in mind, the history of a sudden onset, the presence or history of a rash, positive diazo and Weil-Felix reactions, left no room for doubt that a case *was* typhus. Here it must be emphasised that clinical and laboratory findings must be taken together—it is a mistake to speak of clinical as opposed to laboratory diagnosis, and a diagnosis can only be arrived at by a careful summing-up of all factors.

With regard to the differential diagnosis, only two other diseases needed seriously to be thought of: influenza and enteric. (*a*) With regard to the former it is wise to adopt an attitude of caution; as a convenient term for describing an acute febrile condition without specific character it may be very useful, but apart from epidemics such as occurred in 1918–19 it may be seriously questioned whether the disease is a clinical entity. At all events, in every case of so-called influenza every other possibility must be reviewed. In the outbreak dealt with the presence of a rash, the characteristics of this rash, and the presence of a positive diazo-reaction sufficed to exclude influenza. (*b*) Enteric is more difficult, and the distinction is mainly clinical, the important points being sudden onset, type of rash, particularly as to its distribution, and the presence of subcuticular and hæmorrhagic elements, the absence of abdominal symptoms, and, though too late to be of much practical importance, the crisis, and the remarkably sudden improvement that occurs then. The Widal test is of no distinctive value as it is frequently positive in typhus. The Weil-Felix reaction is of great practical value, though being a non-specific reaction further experience of its presence or absence in enteric is to be desired.

In the present investigation the Weil-Felix tests were carried out in the Birkenhead municipal laboratory, living cultures of *B. proteus X 19*, kindly supplied by the Lister Institute, being used. With regard to the technique of the tests, we obtained much help from a paper published in THE LANCET on Feb. 4th, 1922, by Prof. James Wilson.

So much stress has been laid upon the laboratory helps to diagnosis that it will be well to give a summary of the findings in each case in Table II. It will be seen that the Weil-Felix test was positive in all cases. It was not present in one case on the sixth day, but appeared later, and another previously positive was negative on the fiftieth day. The diazo-reaction was positive, generally speaking, throughout the febrile period and became negative after the crisis. The Widal was irregular, being positive in three out of the nine cases investigated.

TABLE II.—*Results of Laboratory Findings: Weil-Felix, Diazo, and Widal Reactions.*

Case No.	Weil-Felix R.	Diazo R.	Widal R.
1	P. 1/400.... 39th. N. 50th.	N. 38th.	N. 50th.
4	P. 1/200 35th.	N. 37th.	
5	P. 1/400.... 13th, P. 1/6400 23rd.	P. 12th and 14th, N. 16th.	N. T.A.B. 23rd.
6	P. 1/400.... 12th, P. 1/400 21st.	P. 8th and 13th, N. 17th.	N. T.A.B. 21st.
7	P. 1/25,000 14th, P. 1/6400 21st.	P. to 17th, N. 21st.	P. T. 1/100 21st.
8	N. 6th, P. 1/800 12th and 1/1600 17th.	P. 6th to 19th (died).	P. T.A.B. all 1/200.... 17th.
9	P. 1/400.... 13th, P. 1/200 22nd.	P. 10th and 11th, N. 13th.	N. T.A.B. 22nd.
10	P. 1/400.... 13th, P. 1/200 25th.	P. 12th and 15th, N. 17th.	N. T.A.B. 25th.
11	P. 1/400.... 8th, P. 1/400 21st.	P. 8th to 15th, N. 17th.	P. T. 1/400.... 21st.
12	P. 1/800.... 6th.	P. 2nd to 10th, N. 11th.	N. T.A.B.... 6th.

P = positive. N. = negative.
The ordinal numbers represent days.

Note.—All days referred to are days of disease. The figures in the agglutination tests show the highest dilution in which the test was positive. A series of dots after the figure—e.g., 1/400....—indicate the limit of the test, and it is possible that a higher end-point would have been obtained had this been tested for.

Method of Spread.

It has always been recognised that typhus tends to flourish and spread in places where dirt abounds—rooms with dirty floors, dirty walls, dirty bedclothes, calling for the use of soap and water; and dirty air, calling for the use of open windows. It has also long been known that another disease is fostered by the same conditions—pediculosis. Recent investigations have shown that these two diseases are associated to this extent at least, that the infection of typhus is carried from person to person in one way and in one way only—by lice. After feeding on and absorbing blood from a typhus patient they transfer their attention to a healthy individual; and in due course the latter develops the characteristic symptoms of typhus. Nits from an infected louse can hatch out young lice which are infected and can carry the disease.

Administrative Action Taken to Check Spread of Outbreak.

The chief steps taken in dealing with the outbreak under consideration may be briefly indicated.

(*a*) Removal of all recognised cases to the infectious diseases hospital. All patients were passed through a delousing room before entering the ward. Here hair was shaved and measures taken to remove all lice and lice eggs (nits). Protection in the form of special overalls, &c., were devised for the nurses, medical staff, porters, &c.

(*b*) Removal of contacts from patients' homes to an emergency quarantine station fitted up in the infectious diseases hospital. All these individuals were also deloused and bathed before admission.

(*c*) Search for all persons who had been in contact with known cases of the disease, and constant watch for new cases.

(*d*) Disinfection by steam of all clothing, &c., used by patients and contacts. Destruction of rags and other rubbish—present in abundant quantities in many houses where space is limited.

(*e*) Disinfection and disinfestation of houses.

Most of the houses were of a very poor and dirty type. The disinfection and disinfestation had to be carried out at considerable risk to the men engaged. Walls, ceilings, floors, and furniture were washed with corrosive sublimate solution, and sulphur fumigation was carried out. Similar steps were also taken in connexion with the wards, &c., at the Poor-law infirmary which had been occupied by patients suffering from the disease. With the exception of the case which developed in quarantine (No. 12), and which presumably contracted the disease before admission, no further cases occurred.

Our acknowledgment and thanks are due to Dr. French for certain clinical data collected regarding patients during their stay in the Tranmere Poor-law Infirmary, and to Dr. Percival Letts, of the Ministry of Health, and Dr. C. O. Stallybrass, both of whom kindly discussed the cases and the outbreak generally.

HYSTERICAL BILATERAL PTOSIS AND CONVERGENCE EXCESS.

WITH NOTES OF A CASE.

BY SAMUEL LODGE, O.B.E., M.D. DURH.;
AND
WILLIAM OLIVER LODGE, M.D. LEEDS,
F.R.C.S. EDIN., D.O.M.S. R.C.P.S. ENG.

> "To the disturbances of the functions of the eyes we are often able to apply tests more delicate than those which pertain to the investigation of other organs, and therefore should be able more accurately to interpret their symptoms."—*G. E. de Schweinitz.*

IN investigating curable nervous affections which consist of involuntary dissociation of voluntary functions, it is well to bear in mind that symptoms depend mainly on the site of a lesion. Any motor disturbance may be localised approximately. In the lower limb, loss of every movement except flexion, adduction, and internal rotation of the thigh points to the cauda equina; astasia abasia, in which the patient is unable to stand or walk, though capable in the recumbent position of performing all movements correctly, may logically be referred to some level higher than the Rolandic cortex. In a case of hemi-anæsthesia, inability to feel the vibrations of a tuning-fork on the affected side of the sternum, although the vibrations must be conducted to the normal side, localises the interference to a level at which all forms of sensation from both sides of the body become associated together in kaleidoscopic patterns which are influenced by heredity, training, or the needs of the moment. Let him who doubts consider the simple sensations analysed in judging the direction of the wind by holding up a moistened finger to the breeze, and then ponder over the synthesis of Paganini's amazing execution on the single G-string which held vast audiences spellbound. For the exercise of every function neurones become associated, each centre being guarded by its synapses.

Complex Reflexes.

Where neurones exist reflexes occur, and there is merely an anatomical difference between the mechanism which enables a pithed frog to flick a piece of blotting-paper wet with vinegar from its back, and that which prompts a hedgehog thrown into a pond to curl up until satisfied that no immediate danger threatens before swimming for dry land. When the element of heredity comes into play constant responses to given stimuli merge into instincts (e.g., the migration of eels, on arriving at maturity, to the deepest part of the Atlantic to spawn). Other complex reflexes are of a purely acquired origin. Scott in his novel, "The Pirate," alludes to a seal which flapped its tail to the tune of "Caberfae" and acknowledged none other whatever. A wire-haired fox terrier was always on the alert when his master was about to leave his office; by experiment it was found that the dog, even though apparently fast asleep, recognised the faint click of the lock of a safe as an infallible sign that work was over, and jumped to his feet with every manifestation of eagerness to depart. Pavlov observed that if he regularly rang a bell before a dog's feeding times the sound alone eventually made the animal's mouth water, but under certain circumstances, if food were withheld, the animal fell asleep, showing that other reflexes were inhibited. He termed this a "conditioned reflex." In man, from the time an infant first learns to sleep at the sound of a lullaby, conditioned reflexes of all grades of complexity are being developed, exercised, and lost—one may regard them as psychological units.

An Illustrative Case.

In the case described hereunder the emotions induced by certain surroundings became the signal for the onset of a peculiar disturbance of the ocular muscles.

On March 24th, 1922, a widow, aged 45, complained that suddenly, whilst in church, she had become unable to open her eyes, and had to be led home. In 1902 we had removed the crystalline lenses for high myopia. The vision, at first R. 6/9 with −5·0 sph., L. 6/12 with −1·0 cyl. ax. 180°, by 1912 had gradually deteriorated to R. 6/36, L. 6/15; esophoria 7°. The patient had suffered from ethmoidal trouble complicated by asthma, but resection of the middle turbinals in 1921 had completely cured both conditions.

Condition on Examination.—The lids were found closed as in sleep; when the patient attempted to open them, the forehead became furrowed and the eyebrows arched, but the palpebral aperture did not open, nor was the head thrown back. On raising the lids with the fingers the eyeballs were revealed in a state of extreme convergence, so that images of reflected light fell external to the cornea, slightly above its horizonal diameter. Vision was reduced to hand movements; the pupils were normal and reacted to light.

Suggestion was brought to bear, and to reinforce it a few minims of alcohol were injected into the lids. They soon commenced to rise slowly, the lid last injected lagging behind its fellow; the entire syndrome disappeared and the vision regained its customary acuity. There was a slight relapse on the following Sunday.

On further inquiry it was found to be no mere coincidence that the attacks occurred on Sundays. A memorial service for the patient's soldier husband, killed in the war, had been held at Grimsby; she intended to revisit the town, and the prospect of attending divine service there brought back poignant memories. We urged her by no means to abandon this intention, assuring her that she might make her pilgrimage, if not without sentiment and emotion, at least without fear of loss of sight. She overcame her forebodings, and by acting on this advice gained freedom from further attacks and a new spirit of confidence in the future.

As a rule, the association between a recrudescent emotional tone and an automatic action is set in early life—here the history covered but five years; yet no other relevant psychical experiences were discovered, and the symptom seemed appropriate to the context.

We are not alone in supposing that centres concerned in emotional states may usurp control of the normal channels of communication between the brain and other organs. According to Prof. Hering, "In asthma afferent nerve impulses resulting from certain stimuli produce a reflex contraction of the bronchial muscles and a narrowing of the bronchioles. The reflex may become a 'conditioned' one, and be induced by any afferent impulse resulting from a stimulus which has been associated with its occurrence. The pathways in time are so 'grooved' that the reflex takes place very readily, and is excited by any afferent nerve impulse which has previously been associated with asthma."

The variety of manifestations, if we include the rarer visceral, trophic, and vaso-motor forms, is almost infinite, but Nature protects most jealously the functions on which life itself depends. Among the distinctive properties of the synapses of the higher centres is their relative susceptibility to anæsthetics. The fact that the functions least affected by hysteria are those last affected by anæsthetics, and vice versa, is utilised in the diagnosis of phantom tumour. Complications of hysteria are in a different category; in functional dysphagia, for instance, the unbalanced diet may produce enlargement of the spleen and secondary anæmia, and after restoration of normal deglutition failure of the thyroid to cope with the increased food-supply (Vinson). Medical literature records many instances of organic complications which may ensue when voluntary functions undergo involuntary dissociation from curable causes.

We have described an unusual disturbance of the ocular muscles, impossible for a malingerer to simulate, but possibly modified by the pre-existing state of refraction and muscle balance. Its recurrent onset in response to emotions produced by certain definite surroundings suggests a "conditioned" reflex, and lends support to the hypothesis that centres concerned in emotional states may usurp control of the normal channels of communication between the brain and other organs.

References.

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THE MEDICAL TREATMENT OF CATARACT.

BY INGLIS TAYLOR, M.B., C.M., F.R.C.S. EDIN.,
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MARYLEBONE-ROAD, N.W.

FOR years ophthalmic surgeons have been striving to find some means of curing, or at least delaying, the advance of cataract beyond the stage when work must be given up, and financial conditions make its continuance imperative. Until fairly recently I was very sceptical that such a desirable end would be attained, but now I know better. This excellent result is chiefly due to the exertions of Badal and Dor, though many others were working on the same lines.

Badal began with the assumption that cataract was due to a dehydration (sclerosis) of the lens, and used iodine in alkaline solution as a collyrium, and later for ocular baths, with some success. Dor,[1] in 1919, demonstrated that cataract is the result of hydration of the lens, the hydration being due to the fact that the blood contains hydrating ferments, such as occur in the blood-serum of rabbits when naphtholin is ingested, and in the serum of certain diabetics ; in both conditions the frequency of cataract is well known.

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[1] Clinique Ophtalmologique, June, 1919.

Calcic-Alkaline Iodide Treatment.

Dor's treatment, therefore, consists principally in adding the dehydrating action of calcium to the lignifying and other actions of iodine. This preparation was still used as an eye-bath until Chauvin, director of Blache Laboratories, brought it out in the form of an ointment, under the name of calcic-alkaline iodide, and in this form it is now used. As a bath it frequently caused irritation, and the treatment twice a day, continued if possible for half an hour each time, was very irksome.

The ointment is in most cases quite painless, and should be so, but like badly mixed hydrarg. oxidi flav. it can be very painful ; when pain occurs the tube should be changed for another. Messrs. Rouse and Co., chemists, of Wigmore-street, London, W., obtained a supply of the tubes for me about a year ago, and having given it a fair trial, I am able to express a very strong opinion in its favour.

Naturally, the more incipient the cataract when brought under treatment the more easily is it absorbed, but it must not be thought that only these very early cases are successfully treated. Though strongly commending the treatment, I have had too much experience in operating to have any doubt that absorption is not the treatment for an advanced case, nor is it claimed that the treatment should be used in such cases. All told, I have had about 20 cases under treatment, but all of these cannot be counted as a fair indication of the merits of the treatment, as at first I was inclined to try the effect on cases which were too advanced. Another cause of reduction in numbers, was, I am sorry to say, the want of faith in trying a new remedy, of the medical profession, ophthalmic and otherwise. Patients applied to their general practitioners or through a friend to the friend's oculist, and were informed there was no cure for cataract except operation. They naturally ceased to attend, and now have the weariness of waiting. Of the rest I treated, I now have four or five with full vision, and the others are in various stages of improvement.

The following is a typically good case :—

Mrs. G., aged 59 ; Sept. 11th, 1923, no cataract visible in right eye, pupil not dilated, V. = 6/6 ; in left eye cortical cataract, and two of the striæ meeting in the middle, V. = 6/24. Ung. calcic-alkaline iodide ordered for left eye only.

On Oct. 15th, R.V. = 6/6 part c. diff., L.V. = 6/12, all but one letter. Ung. ordered for both eyes.

On Nov. 19th, R.V. = 6/6 a little slowly, L.V. = 6/9, all but one letter.

On Jan. 22nd, 1924, V. = 6/6 all but one letter, each eye quickly, and the last letter after hesitation.

To illustrate improvement, I give other cases.

Miss S., aged 51. July 17th, 1923, cortical cataracts, V. = 6/60 dimly, not improved with glasses. On Sept. 6th, V. = 6/36 dimly and with −2 D. sph. 6/36 clearly. On Jan. 10th, 1924, V. c. −2 D. sph. = 6/12 (2) each eye.

Mrs. K., aged 58. On Sept. 12th, 1923, cortical cataracts. R.V. c. +1·5 D. cyl. 6/12, L.V. c. +0·5 D. cyl. 6/9. On Nov. 27th, c. above R.V. 6/6 (3), L.V. 6/6 all.

Miss B., aged 64. On Sept. 17th, 1923, early cortical cataracts, c. + 1 D. sph. and cyls. V. = 6/6 slowly. On Jan. 31st, 1924, c. above V. = 6/5 (3) each eye.

Mrs. A., aged 48. On Oct. 29th, 1923, cortical cataracts. R.V. c. +1 D. cyl. = 6/9, L.V. c. +0·5 D. cyl. = 6/6 a few. On Dec. 7th, 1923, c. above R.V. = 6/6 a few, L.V. = 6/6 all.

Mrs. J., aged 73. On Nov. 15th, 1923, irregular cataracts. R.V. < 6/60, L.V. c. +0·5 D. sph. = 6/12. On Jan. 11th, 1924, R.V. < 6/60, L.V. c. above several letters of 6/6.

In another case, an old lady, aged 82, with advanced cataract in left eye, early nuclear in the right eye. V. = 6/6 part and after treatment = 6/5, so age is no impediment to treatment.

It is claimed that the treatment overcomes the opacity of the lens, sometimes for a considerable period, but at present it seems to me that to retain normal vision a fortnight without treatment is long enough at a time.

Clinical and Laboratory Notes.

A CASE OF "HAIR-BALL" IN THE STOMACH OF A TEN-YEAR-OLD GIRL.

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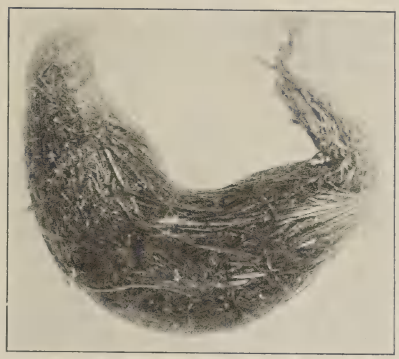
THE following case is, I think, worthy of record :—

A girl, aged 10, was sent into the Royal Hospital for Sick Children by her doctor in Aberfeldy, who stated that following an attack of jaundice in spring, she had become emaciated, complained of pain at the umbilicus and of inability to take food. The history given by the mother before operation was brief and to the above effect ; the child was evidently going rapidly downhill. No family history of tuberculosis. No serious illnesses.



"Hair-ball" of grass, reeds, string, cotton, and hair, removed from the stomach in the case described.

Condition on Examination.—Patient was a well-grown but rather emaciated girl ; she was very shy and reserved and answered questions with reluctance. Asked to show the site of any pain she always pointed exactly to the umbilicus. The abdomen moved freely and showed no distension. On palpation the upper parts of both rectus muscles appeared to be somewhat resistant, but there was no true rigidity and no pain was elicited on pressure. There was no tenderness over the cæcum or kidneys and no enlarged mesenteric glands could be made out. The urine on centrifuging showed an occasional pus cell and red blood cell, but not sufficient in any way to account for the patient's condition. No definite diagnosis was made ; the possibilities of appendix dyspepsia and T.B. mesenteric adenitis and Meckel's diverticulum were considered. Laparotomy was advised as the child was evidently ill and going downhill.

Operation.—Laparotomy was performed on Sept. 13th. 1923. A right rectus incision 3 inches in length with the centre just below the umbilicus was made. The cæcum and appendix were sought for first and found to be healthy. There were no enlarged mesenteric glands and no Meckel's diverticulum could be found. On passing the hand into the upper abdomen a hard mass, lying transversely across the middle line, was felt above the umbilicus ; it felt very like a leather-bottle stomach. The incision was enlarged for two inches upwards and the greatly distended stomach presented, containing a hard tumour, in shape and size somewhat like a double banana, which completely filled the stomach and passed into the first part of the duodenum, also greatly distended.

A horizontal incision was made in the anterior wall of the stomach and the tumour as depicted in the photograph was removed. It was seen to consist of grass, reeds, string, cotton, and hair, inextricably mixed into a solid mass. A piece of string passed from the tumour into the duodenum and had to be cut. The opening in the stomach was closed by two layers of catgut and the abdominal wall was sutured.

The child was not upset by the operation, and apart from being highly excitable and almost hysterical for the first two days, she made an uninterrupted recovery and was discharged on the twenty-first day much improved in general health.

Details of History.—Following the operation the mother was interviewed again, and a much more detailed and more enlightening history was obtained, the salient points of which were: From the age of 3 the child had been very nervous and easily frightened. She went to school at the age of 6, but disliked and feared the teaching. She became more nervous, and even the passing of a horse and cart on the road to school terrified her. She was very sensitive and very affectionate and always wanted to be by her mother's side. A year before admission her mother noticed that she was always chewing whatever she had in her hand—chiefly sticks. She was reprimanded for this habit. Shortly after she began to bite her nails and then to chew her hair. On account of this latter habit her hair was cut short. Her mother tried to cure her of these habits, but never at any time realised that the child was swallowing any foreign bodies.

A CASE OF PERSISTENT PRIAPISM.

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With Notes on the Surgical Treatment by

R. H. JOCELYN SWAN, M.S. LOND., F.R.C.S. ENG.,
SURGEON TO THE CANCER HOSPITAL, BROMPTON.

Hinman[1] states that only 170 cases of persistent priapism have been recorded in the whole medical literature and reports two new cases, both in coloured men. He states that the pathogenicity is varied and obscure, and that, as a rule, the priapism responds to no form of treatment. Woolburton[2] reports a case associated with masturbation, and Cowie[3] records one complicating myxosarcoma of the scrotum. G. W. Theobald[4] reports a case associated with myelogenous leukæmia, and Sullivan[5] records one very similar to the case here reported. The following is an account of my case:—

In the early morning of August 27th, 1923, I was called to see an unmarried man, aged 47, who was suffering from persistent priapism and difficulty in micturition.

Previous Illness.—Typhoid fever at age of 28. No history of syphilis or gonorrhœa. At age of 25 he stated that he had a painful erection lasting six to eight hours. No recent accident.

Present Illness.—Began at 5 A.M. on the previous morning, the 26th, when he was wakened by a violent and painful erection, and found that he could only micturate with difficulty. There had been no recent coitus or history of injury to the penis. He went about as usual during the day, including a cycle ride of two miles, the discomfort being bearable. The erection undiminished when he went to bed. As he did not sleep and had increased difficulty in micturition, he sent for me at 5.30 A.M. on August 27th.

Condition on Examination.—Penis in extreme erection, resting on suprapubic region ; any attempt to raise it caused severe pain. Corpora cavernosa very firm on each side, and could be traced easily along the pubic rami as rigid, elongated swellings. Glans penis not swollen in proportion. Dorsal vein of penis not distended; no œdema of prepuce. There was absence of sexual desire. Pulse 78. Temperature 98° F. Examination per rectum revealed nothing abnormal, the prostate and vesicles being normal. Neither liver nor spleen palpable in abdomen, and heart and lung sounds normal. No paresis in legs and knee-jerks; plantar and cremasteric reflexes normal. Cutaneous sensation normal in penile and perineal areas. Pupils reacted well to light. No urethral discharge and no enlarged glands palpable in inguinal, femoral, or iliac groups. Scrotum and testes normal. Urine acid, sp. g. 1025, with a deposit of urates. Albumin and sugar absent.

Blood examination: hæmoglobin, 90 per cent.; red blood corpuscles, 4,700,000 per c.mm.; white blood corpuscles, 12,600 per c.mm.; colour index, 0·9. Wassermann reaction, negative.

Progress and Treatment.—The increasing difficulty in micturition due to the persistent erection was relieved by frequent hot baths, often four times a day; but all treatment was ineffectual in reducing the erection. Pain in the penis, especially at the penoscrotal junction, became increasingly severe, and on Sept. 7th the whole penis was becoming discoloured and assuming a dull livid hue. Fearing commencing gangrene of the penis, I had the patient removed to a nursing home.

At this stage I asked Mr. Jocelyn Swan to see the patient with me, and the following notes are supplied by him:—

"Finding no physical cause for the condition, it was decided to try the effect of cutting off any central stimulus by means of intrathecal anæsthesia. Lumbar puncture was made between the third and fourth vertebræ; the cerebrospinal fluid was clear and under no tension. Intrathecal injection of stovaine and glucose was made. Complete muscular relaxation of the legs with anæsthesia to the level of the umbilicus was obtained, but there was no diminution in the rigidity of the penile erection. It was therefore decided to operate and to incise the crura in the perineum rather than the penile corpora cavernosa. The legs were raised into the lithotomy position, and the perineal surfaces shaved and cleaned with iodine, &c. An incision was made obliquely downwards and outwards on the left side over the pubic ramus and the erector penis muscle exposed and incised; the crus penis was much thickened. This was incised in the line of the wound, when dark, semi-clotted blood slowly exuded. By pressure on the crus and on the penile corpora cavernosa a quantity of the same viscid dark blood was expressed, assisted by the passage of closed forceps into the crus in a forward direction. A similar procedure was adopted on the right side, the same dark blood being expressed, when the whole penis became quite flaccid. A small drainage-tube was passed into each crus and the wounds lightly sutured. No incisions were necessary into the penile corpora cavernosa, the incisions into the crura being dramatically effective in entirely relieving the tense erection."

Subsequent History.—After the operation the penis remained flaccid and the condition was entirely relieved. The difficulty in micturition was also overcome. A moderate amount of bloody discharge continued for a few days, but the wounds healed well, and the patient left the home in 28 days. He has had no return of the priapism, but states that he gets an erection, though the erect penis is drawn to the side. He has had three nocturnal emissions.

Remarks.

I can offer no explanation of the cause of the persistent and painful erection. In the absence of leukæmia, venereal disease, disease of the nervous system, and of trauma, I think that the case must be called one of "idiopathic" priapism in which nothing short of operative interference was of any avail. The cause of the thrombosis in the corpora cavernosa and crura of the penis remains obscure. The immediate relief obtained by direct incision into the crura of the penis in the perineum, followed by the expression of a quantity of dark, semi-clotted blood, points to the treatment to be adopted in future cases, even though true erection may be subsequently affected by the operation. The failure of intrathecal anæsthesia to reduce the erection suggests that the cause must be looked for in the vascular rather than the nervous structures. In some cases, quoted by Jacobson in "Diseases of the Male Organs of Generation," operative measures were directed to the relief of coincident paraphimosis and to direct incision of the penile corpora cavernosa; it would appear that direct attack upon the crura is preferable.

EUGENICS EDUCATION SOCIETY. — On Friday, April 11th, at 8.30 P.M., in the rooms of the Royal Society, Burlington House, Piccadilly, W., Mr. W. T. J. Gun, of the London Society of Genealogists, will lecture on Studies in Hereditary Ability. Major Leonard Darwin will take the chair. Members of the Society and all interested in the above subject are invited to attend.

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[1] Annals of Surgery, 1914, lx.
[2] Medical Record, March 31st, 1917.
[3] American Journal of Dis. of Childr., 1920, xx.
[4] THE LANCET, 1922, ii., 405.
[5] Buffalo General Hospital Bulletin, April, 1923.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF COMPARATIVE MEDICINE.

COMPARATIVE PATHOLOGY OF CAPTIVE ANIMALS AND MAN.

AT a meeting of this Section held on March 26th, with Sir LEONARD ROGERS in the chair, a discussion was held on the above subject.

Dr. N. S. LUCAS read the opening paper and showed a number of specimens and microscopic sections from animals in the London Zoological Society's Gardens. The subject, he said, was much wider than a comparison of such diseases as tuberculosis, glanders, anthrax, in man and animals, or the relation of small-pox to ordinary cow-pox. The study of this comparative pathology had been so far poorly developed, largely because, so far as he knew, the Zoological Gardens in New York and London were the only ones where post-mortem examinations on the animals which died were systematically carried out and the results recorded. The study was further hampered by the dearth of knowledge concerning wild animals in their normal state; even the process of rumination in domestic animals was but imperfectly understood.

Effects of Captivity upon Animals.

Captivity must exercise a great influence on the lives of animals, sometimes in shortening life, often in lengthening it. In contrast to "a man is as old as his arteries," it could be said that "an animal is as old as its teeth," for when its teeth are worn or otherwise useless it can no longer defend itself or procure food. But the captive animal had its food found and if necessary prepared for it, and could take it without molestation; its life was by this means prolonged. A long course of unnatural diet in captivity would tend to shorten the normal life by lessening the animal's resistance to any infection which might attack it. The natural span of life of various wild animals was not known; by a process of ringing nestling birds and instituting a system of reporting their appearances it was hoped to acquire that knowledge concerning birds, but there were difficulties in the way of applying this to animals. To some animals, petting and attention seemed a necessity; an example of this was the marmoset, which did not live long in institutions; at the "Zoo" the usual life of this creature was about six months, but private owners could keep them in their houses three or four years. Another excellent example was the gorilla.

Diseases of Captive Animals.

In the Zoo there was a practical absence of those diseases which in man and domestic animals resulted from work or the strain of over-stimulated reproduction. Though man suffered from many diseases to which the captive animal was not subject, the captive animal had some which were not fatal to man. In man, inanition was equivalent to starvation, but in the Zoo it meant that the animal continued to eat, but did not receive benefit from the food, was deficient in body-fat, and died. "Senility" in these animals usually meant granular kidney, atheroma, congestion of the lungs, perhaps cirrhosis of the liver. A condition unparalleled in man was the presence of white laminated concretions in the stomach of the porcupine. Analysis of one of three such masses showed an organic origin; it was insoluble in acids, and was apparently made up of smaller amounts of indigestible vegetable substance; there was no sulphur found in it, and no cause for the indigestibility was discovered. Acute specifics, including syphilis and gonorrhœa, were absent in the captive animals; whether they suffered from the anæmias was difficult to ascertain, as it was almost impossible to obtain blood for examination, though leukæmia with splenic enlargement could be diagnosed, and there was one very probable case of this on record. Hodgkin's disease had not been recorded at the "Zoo," neither had acute rheumatism, and endocarditis was very rarely met with, though he had seen a severe case in a monkey.

Malignant disease was moderately rare in these animals, but not because the animals were too young for that disease to manifest itself. Carcinoma of the thyroid was fairly frequent in dogs, and in the Zoo wolves, jackals, and wild dogs had been affected with it; he had seen carcinoma of the testis in a green Australian love-bird. Melanotic sarcoma of the suprarenal occurred in the antelope, and sarcoma of the palate has been detected in an ostrich, and when death eventually ensued there was a secondary growth in the intestine. There had been no case of sarcoma or carcinoma among the apes and monkeys in the "Zoo" for 20 years. The nephritis in these animals was most commonly of the acute kind, but the small white and granular kidneys had also been found. He had never seen a case of cerebral hæmorrhage among these animals. Pleurisy, other than of tuberculous origin, was very rare in them, but empyema was not uncommon. Bronchitis was not an especially common cause of death, but when the lungs became congested the effect on the health was marked, for the animals had but small resistance to pulmonary infection, a fact which Dr. Gaskell, at Cambridge, had amply confirmed. Confined animals also showed but feeble resistance to inflammatory conditions in the alimentary tract, though this was not noticeable since greater attention had been bestowed on cleanliness. Among these animals he had never seen a case of tuberculous meningitis, nor a mammal with a tuberculous joint, but he had seen a dove with both knee-joints involved in this disease. Tuberculous disease of genital organs was very rare; he had seen a case of tuberculous epididymitis in a monkey, and one in a bird.

In conclusion Dr. Lucas said many more years must be spent in accumulating facts on this subject before an attempt was made to build theories, but he hoped others would follow their own special lines of inquiry, and so help to further human pathology from this standpoint.

Prof. G. H. WOOLRIDGE, speaking as a veterinarian, said that the epizoötic diseases were rare in "Zoo" patients mainly because they were kept in semi-isolation, apart from the careful quarantine insisted upon in the case of fresh arrivals. It must be remembered in regard to epizoötics, especially of a catarrhal nature, that they were specific to the particular species; he did not think there was any close relationship between the serious contagious catarrhs of the different types of animals, though many of them had features in common. For example, a disease resembling distemper in the dog was met with in the cat, but there was no evidence of intercommunication; another instance was the influenza of the horse, which was much like that of man, yet here again no intercommunication had been established, though attendants on such horses might have catarrh at the same time. Most of the cases of tuberculosis in the "Zoo" had been found to be due to the bovine strain of the bacillus. It had often been said that the tuberculosis suffered by parrots was of human origin, and that raised the question of danger to the members of a family in which such a parrot had its home. He had no data to offer on that, but hoped some would be forthcoming, because of the importance of the risk. Both tuberculous meningitis and tuberculous arthritis were common in domesticated animals; in most of the cases he had seen it had been congenital, though sometimes the disease was not manifest until a year after birth. The absence of anthrax from "Zoo" animals was due to the manner in which they were kept; in domesticated animals the disease was due to the eating of meal cakes which had been contaminated with hides in the ship or during subsequent handling. There was no doubt about the feeble resistance to lung conditions in these animals, and the bad results were aggravated by the fact that the patients had no power to communicate the fact of their illness until it was very advanced. Horses the subjects of contagious pneumonia often continued to feed for some time, and only a systematic examination of the stud revealed the state of affairs. If a victim of the condition were put to work, the result was always fatal. The comparative absence of malignant disease in wild animals in captivity was a matter of comment, for many of the "Zoo" denizens had lived beyond the age at which domesticated animals developed cancer. In dogs he had seen only two cases of malignant disease in the alimentary tract; one was sarcoma of rectum; in the other secondary growths followed carcinoma in the glands at the anal margin. In domesticated animals nervous diseases were very common, sometimes sufficient to cause death, yet careful post-mortem sectioning gave no result. If careful inquiry were pursued as to this in the dog, it might result in valuable knowledge concerning the human.

Mr. **Humphrey Neame** said a small piece of the third eyelid of a horse was sent to him by a veterinary surgeon to examine. It showed a thickening of epithelium, and he could not decide whether it was papillomatous or carcinomatous, though he suspected the latter. Four months later an ovoid mass three-quarters of an inch long and nearly as wide was sent to him, with the report that it was a recurrence. This was definitely squamous and prickle-celled carcinoma. The two eyes of a kitten sent to him had tuberculosis, mainly of the choroid, the animal having been killed because of blindness. Two months later a second kitten from the same litter, which had been living in a different place, was losing its appetite with lessening visual power, and was sent to him alive. He found tuberculosis in the choroids and disseminated over the body, viscera, and lungs; the brain was not examined.

Dr. **M. J. Rowlands** said he had been informed that the pig was the only animal which could be infected with aviary tuberculosis, and he thought, therefore, that the latter could also infect human beings. He advised that pigs and chickens should not be kept in proximity on farms, and narrated his experiences with chickens fed on foods rich in vitamins. By giving his pigs runs in a wood and feeding them on foods with a vitamin A content he had abolished tuberculosis from one farm entirely. Tuberculous pleurisy he had found to be the commonest cause of death in the pig.

General Sir **John Moore** spoke of an Australian opossum which he had found on the floor of its cage paralysed, and which was found riddled with tubercle, the lungs and pleura being especially invaded.

Mr. **Hamilton Kirk** said that some years ago he was called to treat a parrot, and it was not long before it died from tuberculosis. On inquiry, he found a member of the household had been in the habit of getting the bird to take food out of his mouth. He also spoke of some 80 poultry having died following a tuberculous visitor expectorating in the fowl-run, from which he inferred that they suffered from human tuberculosis.

Prof. **Hobday** expressed his surprise at the comparative absence of malignant disease in "Zoo" animals, as many of them lived to a good old age. With regard to Mr. Neame's remarks, veterinarians recognised that when there was a small tumour on the membrana nictitans it was most likely to be carcinoma, and, however carefully the first growth was removed, recurrence would ensue, and the animal would ultimately have to be destroyed.

Mr. **G. H. Livesey** spoke of the increased lung resistance to disease in animals which could run long distances, like the dog, as contrasted with the cat, the latter showing very little power to fight a lung infection. Apart from traumatism, he believed every case of pleurisy was tuberculous. Often tuberculous disease in the cat was first seen in the eye—i.e., keratitis, or detachment of retina, or dislocation of the lens probably preceded general emaciation. Mr. Henry Gray had declared that of all birds the parrot was most liable to have human tuberculosis.

The **Chairman** said post-mortem examination had now been instituted on animals which died in the Calcutta "Zoo." Aspergillus affecting the ears was very common in the hot rainy season in India. He referred to a discussion to be held on tuberculosis as met with in medical and veterinary practice as one of obvious importance. He agreed that the variety of tuberculosis affecting the monkey seemed to be the human.

Dr. **Lucas** briefly replied.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A meeting of this Society was held at the rooms of the Medical Society of London on March 28th, Colonel L. W. **Harrison**, D.S.O., the President, being in the chair.

Gonorrhœa: Infection by Secondary Organisms.

Colonel E. T. **Burke** opened a discussion on this subject, confining his attention to the male urethra. He said knowledge of the bacteriology of the urethra in general, and of the gonococcus in particular, was not yet so accurate as to warrant dogmatic statements concerning secondary infection. The subject bristled with problems for the pathologist and clinician; truth was not always to be found at the bottom of a test-tube nor on the microscope stage. Sometimes the clinician accepted without question laboratory findings even though they seemed to contradict clinical experience. Laboratory findings had again to pass through the ordeal of clinical experience before acceptance. Where experiment ended speculation began: it was the finger-post to further research.

Symbiotic and Parasitic Organisms.

The view that the healthy body was sterile he regarded as erroneous; it was responsible for the conclusion that whenever the bacillus x was obtained from the tissues or fluids of a sick body, the patient was suffering from x-itis, and treatment was focused on the elimination of bacillus x. Should there be no symptoms, he was designated a "carrier." He agreed with Mr. Frank Kidd in regarding the body as a "bacterial sponge," that certain organisms were naturally symbiotic to the body, and that periodically, and without causing disease, these invaded the blood-stream. Such a conception was necessary to an understanding of the processes of infection and immunity. Some of the organisms, such as the Neisserian gonococcus, were not symbiotic, but parasitic, and their entry aroused resistance, shown first by inflammation. Some of them, such as the pneumococcus, *B. influenzæ*, *B. diphtheriæ*, may become naturalised citizens, losing, or concealing, their undesirable characters. The normal, or naturalised, bacterial inhabitants of any part of the body might, under some stimulus or some indiscretion on the part of the patient, "see red" and become offensive. Conversely, such might settle down and even function for the common good.

Among the organisms which had been recovered from the healthy male urethra were three varieties of staphylococci, diphtheroid bacilli, micrococcus subflavus, streptococci, *B. coli*, and Gram-negative diplococci, not gonococci. He did not agree that any organisms found in the urethra had entered by the meatus; his view was that the organisms which lived on the skin and mucous membranes and in the bowel entered the blood-stream via the lymphatics, and were again got rid of by the various glands, such as the kidney. This intermittent invasion of the blood-stream was the basis of our immunity to these organisms, and it was only when the general or local resistance was lowered that there occurred a rigor, headache, lumbago, or osteomyelitis. As the normal urethra had a bacterial flora, he did not see how an aseptic urethritis could occur. When the urethra was injured, the flora found in the injured area an added stimulus to growth and activity, their character changed, and they took on an enhanced virulence. The gonococcus might cause the initial damage, but even after the disappearance of that organism the damage might to a certain extent persist, and on it the other organisms might flourish. If local treatment was pushed too vigorously, this, by increasing the urethral damage, might do more harm than the actual presence of microbes. The possibility of organisms which were saprophytic to the prepuce, glans, and fossa navicularis being driven up the urethra and flourishing there was a very remote one.

Polymorphism in Bacteria.

With regard to the gonococcus itself, owing to the readiness with which it "digs itself in," it seemed hopeless to expect to eradicate the disease completely by local measures alone; the entertainment of such a hope seemed to be responsible for the disease becoming chronic and for the supervention of secondary infection. He believed that the main element of success in the irrigation treatment in the case of the male was that of the mechanical cleansing, but until chemical agents were available which were both fatal to the gonococcus and harmless to the cells of the urethral membrane, the irrigation treatment would be fraught with much danger in the hands of those who aimed at a rapid cure. Vaccines, sera, the injection of some of the metallic elements in a colloidal state, seemed to be on the correct lines; the important thing was to discover a colloid which had a distinct affinity for the gonococcus. Frequently the bacteriologist was unable to recognise the gonococcus on morphological grounds; the organism in culture showed a marked tendency to deviate from the normal in size, shape, grouping, and staining properties. This could be seen in a 24-hour culture, and at the end of four days the culture would exhibit very few normal gonococci. There thus seemed to be a gradual devolution from the Neisserian gonococcus to the simple coccus, or an evolution in the opposite direction. Many of these variant forms did not differ materially from those found in urethral smears and labelled "secondary organisms." It was very important to know whether these organisms, in whole or in part, were really metamorphosed gonococci, and whether, when receiving the needed stimulus, they would again develop the characteristics of the typical gonococcus. From prolonged residence in the urethra the latter may markedly diminish in virulence, but on conveyance to the healthy female genitalia may resume their pristine malignancy, and the reinfection thence of the infecting male may re-establish the virulent disease in him. Possibly the Neisserian gonococcus was a descendant from one of the normal inhabitants of the genital passages.

Dangers of Over-Treatment.

He emphasised the fact that there were great difficulties in the way of treating gonorrhœa, and laid stress on the importance of early treatment and the avoidance of over-treatment. He believed that, given proper treatment, secondary infection should not occur, and that the main cause of the latter was over-treatment. Gentleness in treatment was necessary, and the urine should be rendered dilute, alkaline, and copious, non-irritating alkaline fluids being used. The protective forces must be stimulated by vaccines. When a secondary infection had occurred, an attempt to beat it out was usually futile and would establish a vicious circle, for it devitalised the urethral mucous membrane and seriously lowered the resistive power. A six months' cessation of all treatment would sometimes prove more beneficial than anything else. The urethra should not be tortured in an attempt to sterilise it.

Serum Treatment.

Miss **FRANCES IVENS** related her experiences at the Morley Hospital, Liverpool, where most of her patients were "respectable married women." In the out-patient department there the incidence of gonorrhœa was 14 per cent., while 24 per cent. of the cases admitted for operation had the infection; 30 per cent. were sterile. Latent cases exhibited a tendency to become acute at the puerperium, or after such an operation as dilatation for sterility. She questioned the wisdom of keeping the woman in ignorance of the nature of her disease. She favoured confidential notification of the disease to the public health department. Her experiences in the war in France brought her into contact with the work of the Pasteur Institute, and what she saw encouraged her to try the effects of a gonococcal serum when she returned to her work in Liverpool. When she resumed there, in 1919, she found that the incidence of gonorrhœa among the patients at the hospital was even higher than before, in spite of the propaganda work which had been done and the clinic which was founded. She used Nicolle's serum on 50 patients, mostly cases with salpingo-oöphoritis with pus formation. Used on packs for the vagina the results were good, but it was not an economical method. She opened both tubal and ovarian abscesses, then injected 10 to 20 c.cm. of serum into the tubes, and left the residue in Douglas's pouch. Rectal salines were also given. In later cases she used the serum subcutaneously, in combination with surgery as before, and she was more satisfied with this method than with any other. Sodium chloride had been found to have a protective action against disturbances following the injection. She did not use it intravenously, as she had seen fatal anaphylactic shock follow it. The after-history of the patients so treated had been very satisfactory; several had since borne children. Though this serum treatment was curative it could not be regarded as prophylactic when the patient continued to be exposed to reinfection. She narrated some cases in which the treatment in severe cases had yielded excellent results. At present there did not seem to be an antitoxic serum available. MM. Dubois and Minet suggested that efforts should be made to obtain serums very rich in antibodies, and the speaker thought much progress would follow the preparation of an antitoxic serum which could be used locally.

Dr. **MARGARET RORKE** agreed with Colonel Burke concerning the morphological changes seen in gonococci; sometimes they looked more like staphylococci. If the patient was in fair health, then, apart from the menstrual period, the gonococci seemed to subside in a remarkable way.

Dr. **T. G. WRIGHT** spoke of cases, rebellious to ordinary treatment, which had cleared up under diathermy.

Dr. **FOWLER WARD** said that, with regard to the male, if he got a negative result with the urethroscope and after prostatic massage he regarded the case as cured. The real test, which could not be instigated clinically, was when the man could practise coitus without imparting the disease to his healthy partner.

Dr. **H. BARDSLEY** said he had found that cases of secondary infection cleared up very well with prostatic massage and the injection of autogenous vaccines. In chronic gonorrhœa he did not think the prostate was usually sufficiently treated.

Dr. **B. B. SHARPE** agreed that as the gonococcus might gradually assume different types the difficulty of diagnosing when an infection was secondary was enhanced. He referred to the stubborn nature of sago-grain urethritis in patients who had not gonorrhœa nor a history of it. Cases of diphtheroid infection in children were also very resistant.

Dr. **A. H. HARKNESS** spoke of his success in washing out the urethra with a 1 in 4000 oxycyanide of mercury solution or potassium permanganate.

Dr. **Z. KADINSKY** said he had not had a case of secondary infection in his cases since he carried out irrigation with plain water. He agreed that cessation of treatment was beneficial in cases of secondary infection.

Mr. **C. MYERS**, alluding to the statement that organisms were always present in the male urethra, said he was constantly receiving hospital reports that there were no organisms, but only a few epithelial cells, and asking that prostatic massage might be done.

The PRESIDENT said he believed there was a growing scepticism concerning pathologists' reports, and when he encountered this he asked whether the specimens had been taken properly. Often they were taken in such a way that the pathologist could do nothing with them. There was certainly room for more coöperation between pathologist and clinician. He had often been in doubt whether the Gram-negative bacilli on a slide were gonococci or not; for that reason he was inclined to adopt the cultural method. If the doubtful organism could be grown on an ordinary medium it went far to negative it being gonococcus, as the latter was very particular about its medium. He did not believe that secondary organisms were natural inhabitants of the whole urethral canal, but multitudes could be found in its first centimetre. In many cases saprophytes grew and set up a mild urethritis because the ground had been prepared for them by the gonococcal infection. Strong enough chemicals might not be used in treatment to turn them out. Stronger solutions than 1 in 4000 oxycyanide of mercury, short of caustic, might succeed. He had had success with 5 per cent. mercuriochrome. Failure to take aseptic precautions was responsible for many cases of secondary infection. Diathermy was very effectual in clearing up prostatic infection.

Reviews and Notices of Books.

MENTAL DISORDERS.

An Introduction to the Study of Mental Disorders. Second edition. By FRANCIS M. BARNES, jun., M.A., M.D., Associate Professor of Nervous and Mental Diseases in the St. Louis University Medical School; Neurologist to St. Mary's Hospital. London: Henry Kimpton. 1923. Pp. 295. 18*s.*

THE outward features of mental disease receive here less attention than is usually expected in a students' manual, and practically no illustrative cases are described. An unduly large amount of space is devoted to the theoretical considerations on which the practice of psychiatry is based, and these sections are written in such a way that they could well be compressed without detracting from their value, or reducing the amount of information they contain. There is, in fact, a singular lack of positive and detailed information throughout the book; the section on paranoia, for example, contains no description of this disease whatever, but consists merely of a discussion as to the proper scope of the term, a well-worn controversy with which a student ignorant of the very nature of the disease need scarcely concern himself. The remarks on treatment are very brief. No mention is made of the use of alcohol in delirium tremens. No attempt is made to adjudicate on the sphere of modern psychotherapy. The author's simplified classification of mental disorders is more intelligible than many that have been put forward. Some of the words and expressions used are unfamiliar; if brevity be the excuse for "pathologic," why "symptomatologic" rather than "symptomatic"?

Dr. Barnes's book is intended primarily as an adjunct to his own clinical teaching at St. Louis, Missouri. Presumably his students are able to gain a considerable amount of clinical experience, for without this they are unlikely to derive much benefit from his book, which is indeed more suitable for advanced readers.

FIFTY YEARS OF MEDICAL PROGRESS, 1873–1922.

By H. DRINKWATER, M.D. Edin., M.R.C.S. Eng., F.R.S.E. London: H. K. Lewis and Co., Ltd. 1924. With 37 illustrations on 35 plates. Pp. 183. 10*s.* 6*d.*

IN the preface to this record of 50 years of medical progress Dr. Drinkwater reminds us how many subjects that in 1873 were shrouded in seemingly impenetrable mystery have yielded up their secrets. In 1873 very little was known regarding germs in relation to disease; in fact, the term bacteriology had not been introduced. In surgery the carbolic spray was in the height of its popularity, while since X rays had not been discovered the treatment of fractures rested on a less certain basis. During the period under review the whole aspect of medicine has been changed. Diseases (for example, malaria and yellow fever) which have been widespread scourges have been partially, and in some places completely, eradicated; surgical operations that were definitely stated to be unjustifiable are now performed successfully every day in the great hospitals all over the world; parts of the body that were looked upon as vestiges of some former age are now known to be of importance, the net result being the relief and prevention of much suffering, the conferring of immunity to certain diseases, and an increase in the expectation of life by several years.

The alphabetical arrangement of the subject-matter is commendable, but since dates form the subheadings it is unfortunate that discoveries and advances are not chronicled in orderly sequence. It is disconcerting, for example, on. p. 93 to find a series of haphazard paragraphs in the order 1881, 1891, 1877, 1874, 1884, 1910, 1876, whereas with a little care in arrangement they would have told a connected story. There are a few regrettable gaps. Under diabetes a reference to the discovery of insulin is to be found, but the most recent entry under cancer is 1903. The book will be useful as a work of reference, and to revive the failing heart of pessimists who see only the fields untilled in medicine and are blind to the progress already made. Among the illustrations are pictures of 25 men whose original work has marked special stages in the progress outlined.

HAND-ATLAS OF HUMAN ANATOMY.

Fourth edition in English. By WERNER SPALTEHOLZ. Edited and translated from the seventh German edition by LEWELLYS F. BARKER. With a preface by FRANKLIN P. MALL. London and Philadelphia: J. B. Lippincott Company. 1923. In three vols. Pp. 902. £3 10*s.*

Spalteholz's Anatomy requires no introduction to the English student of anatomy, and his congratulations, as well as those of all who may have occasion to use this beautiful edition, are due to Prof. Barker and all concerned on the results of their efforts. Even one who is not by any means convinced of the value of "atlases" must perforce praise the exquisite illustrations which make up the bulk of the volumes. It would be but captious criticism to point out certain little details in which we cannot see eye to eye with the original delineator, but the attention of the editor might justly be drawn to the large coloured representation of the fundus oculi. It cannot be said definitely that the condition shown is an example of cerebro-macular trouble, but there can be little doubt that the darkly pigmented macula is not normal, but degenerative; in many respects it would be of advantage to substitute for this figure another fundus in a simpler style. The late Prof. Franklin P. Mall, who wrote the original English preface, was a declared believer in anatomical atlases. Our faith is not so clear and unquestioning. But no one could have hesitation in putting this great production among the books that count.

PAPERS AND ADDRESSES IN SURGERY.

By R. HAMILTON RUSSELL, F.R.C.S., Associate of King's College, London; Consulting Surgeon to the Alfred Hospital, Melbourne. Melbourne: Allen Grant. 1923. Pp. 452.

THIS is a selection from the author's writings of the last 25 years. Various subjects are dealt with, but two stand out as particularly associated with his name. They are the origin of hernia and the treatment of fractures. It is interesting to read again the steps which led to the evolution of the saccular theory of hernia. Much of the reasoning we know now to be sound, but the acceptation of the hypothesis for the origin of femoral hernia without reserve is rendered difficult by the consideration of facts brought against it by other observers. Further study is needed before surgical opinion can become unanimous on this subject.

The same originality in outlook is evident in Mr. Russell's observations on the principles which should govern the treatment of fractures. He insists upon the necessity for the limb being in the natural position of rest, for in this position alone are the muscles so disposed that there is no tendency to incorrect alignment. His methods of treating fractures of the femur and leg are appealing in their simplicity and it would seem in their effectiveness. Yet their application is an art and requires daily supervision. It is much to be desired that the author's advice to withhold passive movements for fractures near joints, especially in children, should be more widely adopted. There is an original method for dealing with intractable stricture of the urethra in another section of the book, and an account of the first recorded case of the removal of a pin from the lung by open thoracotomy. The inspirations which have guided the author through a strenuous surgical life may be gathered from the Presidential Address in Surgery at the 1914 Australasian Medical Congress. It is a delight to read, as it must have been a pleasure to hear.

Urology.

Endoscope operatoire des voies urinaires. By E. Papin, Ancien Chef de Clinique de l'Hôpital Necker, Chirurgien adjoint de l'Hôpital Saint-Joseph. Paris: A. Maloine et Fils. 1924. Pp. 110. Fr.26.

This manual treats of operations which can be carried out upon the posterior urethra, bladder, ureter, and kidney through the cystoscope and cysto-urethroscope. All procedures described are done through prismatic cystoscopes, the direct instruments being only referred to here and there. The author gives a very good description of the various established endovesical procedures, and makes frequent reference to the work and methods of American surgeons. He does not seem to be acquainted with the ingenious retrograde cystoscope of Mr. Swift Joly, by means of which lesions at the bladder neck can be reached. A strong advocate of endoscopic methods, he yet realises their limitations, and recommends resort to open operations when necessary. His treatment of the tuberculous bladder after nephrectomy, by diathermy, is apparently new, and seems to give good results. The numerous diagrams in colour and black and white are beautiful representations of appearances seen through the cystoscope, and depict very clearly the methods employed.

Clouds and Smokes.

The Properties of Disperse Systems in Gases and their Practical Applications. By William E. Gibbs, D.Sc., Chief Chemist to the Salt Union, Ltd., Liverpool. With a Foreword by Sir Oliver Lodge, F.R.S. London: J. and A. Churchill. 1924. Pp. 240. 10*s.* 6*d.*

We shall probably not be content to neglect clouds and smoke in our big cities as we have in the past; they are too costly in two respects—human life and coal. It is known that town fogs are due to incomplete combustion of coal, mainly in the domestic grate; with improved methods of burning we should still have mists, but, owing to the greater temperature of towns, these would probably not be so frequent as in the country districts. Legislation in these matters is very slow here; not so in America, for Pittsburg has apparently cleared its reputation of having the worst atmosphere in that country, and report now has it that the air of the town is as clean as that of Bath. The first six chapters of the book are devoted to the methods of formation and the general physical and chemical properties of aerosols. The remaining five chapters are devoted to the way in which fumes and dirty gases are treated industrially; to dust explosions, their cause and method of prevention; to the preparation of substances in a very finely divided condition; and the use of smoke in warfare. Some account is given of the meteorological conditions affecting the presence of dust and water particles in the atmosphere.

In his foreword Sir Oliver Lodge emphasises the significance of the subject of smokes and clouds in civil life. We can pass on with confidence the commendation he gives to this book, for an extraordinary amount of well-handled information is here got together. It is one to which reference can safely be made on a subject of growing importance to the public health.

The Medical Annual.

A Year-book of Treatment and Practitioner's Index. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1924. Pp. 616. 20*s.*

The appearance of the Medical Annual each year is welcomed not only by practitioners who have little time to keep abreast with current literature except through its good offices, but also by those who read widely on certain limited lines and have learned to rely on this publication for a summary of the year's work, and for indications of progress in directions unfamiliar to them. Especially do practitioners resident in distant parts of the world appreciate the Medical Annual and the beautiful coloured plates with which it is illustrated. The information given is collected and arranged in assimilable form, and the several articles, though brief, are sufficiently critical in tone to guide the reader to a sense of the value of new work. The treatment of diabetes by insulin naturally looms large in the 1924 volume. A discussion of the history of the experimental investigations into the ætiology of disseminated sclerosis appears to be exceptionally complete. It is pointed out that in this, as in many other diseases, it may happen that a spontaneous remission coincides with some particular method of treatment, which may thus gain unmerited credit as a therapeutic agent. This attitude of reserve in assessing the value of treatment is happily growing with the better scientific training of the medical student. Practitioners may rest assured that in this manual no undue praise is given to new remedies without regard to the circumstances of their trial.

Popular Bacteriology.

Fighting Foes too Small to See. By J. McFarland, Professor of Pathology in the University of Pennsylvania. Philadelphia: F. A. Davis Company. 1924. With 64 illustrations. Pp. 309. $2.50.

This is not about pride and covetousness, but about microbes, and it is a pity the author was not frank enough with the audience he desires to reach to say so. It is the outcome of a series of popular lectures on bacteriological hygiene given in Philadelphia, and is but a moderately successful attempt to instruct a lay audience how to make practical use of modern parasitology in an understanding way. Such popularisation is never an easy thing to do well, and Prof. McFarland fails in two different ways. In the first place, he does not realise how completely his own mental and verbal phraseology differs from that of people who have had no training or experience in the natural sciences. And as a result technical words and phrases slip into the narrative more frequently than they should; we do not wonder that one publisher declined it on that ground. And in the second place, the author falls to the temptation of making his readers gasp and wonder at the amazing things he has to tell. Rather more than a quarter of the book is occupied with plague and sleeping sickness—travellers' tales which are miraculous indeed, but hardly within the picture. The laymen neither wants nor needs this; he wants just the same plain truths about microbes that the elementary medical student wants, only they must be expressed in terms he can understand.

Apart from these defects, the book conveys a good deal of useful information which should contribute to the healthiness of its readers. It is too bacteriological and does not lay enough stress on the fundamentals of sound hygiene—the personal and communal common-sense decency and cleanliness in which Chadwick and Simon and their companions laid the foundation-stone of modern hygienic progress. Washing, indeed, seems hardly to be mentioned as an anti-microbial procedure; it is, however, detailed as one of the incidents of life which brings microbes into contact with the body—and this in a country where every big hotel will presently advertise that each bedroom has two bathrooms. Perhaps if washing with sterile water were more general, Prof. McFarland would allow kissing (p. 88), and let us go on taking off our gloves before we shake hands (p. 93). It is, frankly, directions like these which are apt to bring bacteriology into something like popular contempt. The technical details seem to be accurate. "Doubtless a rat-flea can live for a time upon any blood" (p. 251) can hardly be true, since some rat-fleas will not feed upon, e.g., man. On the same page Martin is disguised as "Roger." Dr. Bastian's name is mis-spelt (p. 30). The description of Lister as a "Scotch surgeon" needs qualification.

JOURNALS.

MILITARY SURGEON.—The February number of this journal presents the first of a series of articles on the medical problems of the German army in the late war written by Germans. This month's article, by Colonel Dr. Waldmann, is on Shelters and Water-supply in Defensive Battles, which are characterised by the immense accumulation of men and stores in a very restricted area, with losses very heavy and replacements difficult. The urgent needs in that situation are shelter and water. As to shelter, soldiers must be crowded; the Germans made transportable barracks (huts), each hut holding 48 men, with 200 cubic feet for every man; these were found satisfactory for supports. Huts should be in woods, for shelter from the winds and for concealment. Caves make good shelters. In dug-outs, where 125 cubic feet is the maximum, ventilation is of great importance, and is best secured by a fire, which may have to be of charcoal, lest smoke attract notice from the enemy. Trenches and dugouts must be drained, best to a sump pit; water will find its way here and so will heavy lethal gases; chloride of lime spread about will destroy any mustard gas. Humidity was found more trying than carbonic acid (even 10 per cent.) in these underground passages. Carbonic oxide was watched for with palladium chloride papers. During bombardments latrine buckets had to be taken into dug-outs and emptied during intermissions. Cresol, sprayed in watery solution from a syringe, was found a good deodorant for bodies lying in between the lines. Pill-boxes (of reinforced concrete) had so little ventilation, their atmosphere was so moist, that service in them was dreaded, but they fulfilled the essential requirements of hygiene, and the men could still fight and fight well in them. Colonel Waldmann says that at last even hygiene fails and only iron determination and contempt of death keep men going. The best protection against epidemics is clean water, but the piped supply to the front line breaks down in battle, which cuts the pipes. So underground cisterns were made, wells were developed, even up to the second-line trenches, village wells being cleaned with chloride of lime; in action, water was carried forward by water wagons on field railways, or on men's backs, or had to be dropped by airmen. A filter was put in each man's canteen, chlorination then killed infection and boiling got rid of lethal gases, except arsenic and picric acids. It appears that the German methods were very like those that solved the same problems for ourselves.

The Conduct of Medical Practice.

A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.

XIV.—PRESCRIBING FOR PANEL PATIENTS.

BY LEONARD SHOETEN SACK,
BARRISTER-AT-LAW; JOINT AUTHOR OF "MEDICAL INSURANCE PRACTICE."

We now prescribe, like doctors in despair.—*Dryden.*

THE provision of medicines for panel patients has given rise to much bona fide misunderstanding and to much malicious misrepresentation. The doctor and the insured person have been equally concerned. There is a psychological reason for the patient's suspicion. The "bottle of medicine" still remains an almost sacrosanct plebeian institution. Medical treatment without it is regarded as either mean, inefficient, or neglectful. Health education has not yet persuaded the commonalty to accept without resentment a treatment of self-denial as a substitute for an intemperate indulgence in physic. Anything which tends to depreciate the contents of the medicine-bottle is therefore a factor of great influence on the minds of the insured population.

The widespread misconceptions on the part of many insurance doctors is also explicable. The varying provisions of statute and regulations, and the varying practices at one time current in different areas, have no doubt had much to do with them, but the trouble mainly centres in the novel method of control which the regulations have set up in connexion with what is felt by so many doctors to be essentially a matter for private professional judgment.

The subject is one of such importance both to the reputation and practical efficiency of medical benefit that an elementary restatement[1] of principles will, it is hoped, be forgiven.

Basic Definitions.

There are three fundamental definitions. Section 8 of the National Insurance Act, 1911, defines medical benefit as "medical treatment and attendance including *the provision of proper and sufficient medicines. . . .*" This definition is amplified by the medical benefit regulations. Schedule I. includes among the insurance doctor's duties the prescribing of "*such drugs . . . as are requisite for the treatment of any patient,*" while Section 37 (dealing with excessive prescribing) sets up, as the standard of character and quantity of the medicines, "*what is reasonably necessary for the adequate treatment*" of the insured person.

It is of the first importance that these definitions should be kept clearly before the mind. They are the authoritative statutory definitions to which the doctor can appeal; any departmental decision and any administrative or executive action on the part either of the Central Department or of the local committees which did not accord with them would be ultra vires and could be successfully contested in a court of law.

In fact, however, the Ministry of Health do not appear to have attempted to limit improperly the scope of these definitions or to restrict unduly the professional judgment of the doctor in applying them. Emphasis has repeatedly been given to the principle that the doctor is not only entitled but required to prescribe the medicines—whatever may be their cost—which are, in fact, necessary for the proper and adequate treatment of the patient. On a broad view of the question it could not be otherwise. One has only to consider the list of drugs and appliances for which special payment is made to doctors who themselves supply medicines at a capitation rate. The list includes vaccines, serums, peptone and glandular preparations, and insulin. It is not reasonable to suppose that a scheme, which admittedly allows the provision of these preparations whenever they are actually necessary for the treatment of the patient, should require or encourage the doctor to deny other and cheaper necessary medicines.

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[1] For purposes of brevity reference is made only to medicines, but the principles apply equally to the ordering of such appliances as have been prescribed by Regulation. The discussion does not apply to doctors who themselves supply drugs and appliances at a capitation rate—their main concern is as to the adequacy of the capitation rate.

Checking Extravagance.

The misunderstandings which have overclouded the basic principle appear to be traceable to the provisions of the regulations for dealing with cases of "excessive prescribing." The whole principle of control in this respect, and the detailed machinery which has been set up to secure that control, are criticised on three main grounds: (1) that they are unnecessary; (2) that they constitute an unjustifiable and improper interference with the doctor's professional judgment; (3) that the mere possibility of surcharge constitutes, in effect, a continual menace which has justified the belief in an unduly restricted choice of medicines for insured persons. An examination of these three criticisms is perhaps a convenient way of exploring the subject.

In considering whether there is a need for any sort of check or control, it is necessary to recall that one is dealing with a scheme of insurance. No insurance policy can offer unlimited benefits for limited premiums; the defined premium covers a defined risk. The premiums paid on the National Health Insurance "policy" cover, inter alia, the provision of whatever medicines are reasonably necessary for the adequate medical treatment of the policy holder—i.e., the insured person. This is clearly something different from an unlimited supply of medicines or medical preparations, irrespective of their actual need for treating the particular illness. In the case of O'Neill *v.* Middlesex Insurance Committee (1916, 1 K.B. 336) Mr. Justice Rowlatt thus interpreted the position:—

> "The Act is worked upon a scheme that there is to be a fund to provide for these drugs as well as to pay the doctors, and it is obvious that there is a limit to the amount available for that purpose. The duty of prescribing for any patient necessarily involves that the prescription must be reasonable according to the resources available for pay. . . . there must be a duty on a panel doctor not to be extravagant or reckless in ordering medicines which are unnecessarily expensive."

Or, as the principle was stated by the department, the doctor "must prescribe for his insured patients whatever drugs are necessary for adequate treatment, however costly they may be, but on the other hand, he must have due regard to cost and not order the more expensive preparations for purposes for which the less expensive will serve equally well."

Accepting, as one must, this necessary limitation to the benefit provided, some sort of control would seem to be unavoidable. The insurance scheme affects 15 million persons; for England alone 36 million prescriptions are now written in the course of a year at a cost of close on 1½ million pounds, and the number is steadily increasing; 15,000 doctors are entitled by writing prescriptions to make heavy charges on the insurance funds without affecting their own remuneration. If the actuarial calculations underlying the insurance scheme are to be verified, some check must evidently be put upon the giving of benefits which are not covered by the prescribed premiums.

The Machinery of Control.

Granting the need for some form of control, does the existing machinery involve undue lay interference with the professional judgment of the doctor? Let us examine the skeleton construction of that machinery. All National Health Insurance prescriptions are priced at the Pricing Bureaus which have been set up at various centres. In the course of this work certain tables of averages are prepared, affecting the lists of individual doctors, or given areas. These figures are submitted for scrutiny to the Minister of Health. If the scrutiny reveals in the case of an individual doctor an average cost per prescription considerably in excess of the general figure for the area, further details as to the individual prescriptions affected are obtained from the bureau. If this further information still suggests an unexplained and considerable excess above the average, the Ministry take initial action by bringing to the doctor's notice, through the regional medical officer, the facts which suggest extravagant prescribing. The doctor can then either make an oral explanation to his regional medical officer (who will call upon him—accompanied by a representative of the panel committee, if that committee so desire) or he can send a written reply direct to the Minister. Often the matter will not go beyond this stage. If the prima facie case of extravagance seems to require more formal investigation the whole matter is referred to the panel committee—a body, be it remembered, consisting solely of doctors, at least three-fourths of whom are panel doctors. *It rests with the panel committee alone to decide the crucial question whether there has or has not been extravagance;* and before that committee can arrive at this decision they must give the doctor an opportunity of appearing before them or of submitting a statement. The subsequent functions of the insurance committee and of the Minister are respectively to recommend and decide the penalty, if any, to be inflicted if the panel committee finds that there has, in fact, been extravagance. The doctor may appeal against the panel committee's decision to a court of independent referees of whom one must be a doctor; the Minister can similarly refer the case to independent arbitrators if he is unsatisfied with the action of the panel committee. Further, the Minister may permit a panel committee to make the initial investigations of statistics on which the prima facie case is established.

The essential decision as to whether there has been extravagance is thus in the hands of the panel committee or of an independent court of referees on which the profession is represented. So far as there is interference with the professional judgment of the doctor it appears to be an interference sanctioned by members of his own profession.

Personal Variations.

The general opinion or practice of the profession does not, however, necessarily determine the question, for it has on several occasions been recognised that the personal element in prescribing is a material consideration. The following official dicta may be quoted:—

> "In interpreting the term 'reasonably necessary' . . . allowance must be made for the personal element. It is clear that if insurance practitioners are to retain the independence of judgment that is necessary for the best treatment of their insured patients, rigorous conformity with the view of the majority of the profession or of a Committee of the profession must not be required of them; and, that the progress of medical science may not be checked, scope must be allowed for the exercise of initiative and for suitable experiment. The enforcement of stereotyped methods and standards of prescribing would be prejudicial both to the immediate interests of patients under treatment and to the ultimate interest of insured persons generally. . . . Just as one workman can use a tool better with a handle of one shape and another with another, so it is desirable that, within reasonable limits, a doctor should be allowed to follow methods of treatment which are most congenial to him. . . . .
>
> The question is . . . not to be determined by the test of rigid formulæ, but by the application of common sense to the facts of the particular case, which must be viewed as a whole."

Similarly, consideration is given to the particular circumstances of the practice. Thus, the average cost per prescription will probably be greater in the small practice. Or again,

> "If the patients of a practitioner considered collectively require a more than usual amount of treatment, or are particularly liable to illnesses requiring treatment of a more than ordinarily expensive kind, or if he has a run of cases of a particular kind requiring specially expensive treatment, all these facts must be taken into account in interpreting the meaning of a high average cost of prescribing."

On the other hand, it has been established that the adoption by the doctor of similar methods of prescribing for private patients does not in itself afford proof that there has been no extravagance as regards panel patients. Neither is the preference of the patient for a particular medicine regarded as providing in itself a sufficient ground for relieving the doctor of the responsibility to decide what is necessary.

Excessive Prescribing.

There remains the criticism, undoubtedly of considerable influence, that the mere existence of an elaborate machinery for penalising excessive prescribing places an undue restraint on the writing of prescriptions. A brief survey of the main principles on which cases referred to the Minister have been determined may assist in assessing the measure of apprehension which is justified.

One group of cases deals with an unnecessarily high cost of the medicine or of some of its ingredients. This may occur through the unnecessary use of patent medicines or proprietary preparations where an equally efficacious but less expensive B.P. preparation is available. Proprietary preparations are not, as a class, disallowed. "We recognise," the department have said, "that proper allowance for the needs of exceptional cases might justify the use of a proprietary article in a certain number of cases." The question to be determined is "whether it was necessary for the adequate treatment of the patient that preparations made by particular manufacturing firms should be used instead of less expensive preparations suggested in the B.P. which are ordinarily employed by medical practitioners for the same purpose." Many proprietary preparations have notoriously no greater therapeutic value than cheaper B.P. preparations and in such cases it seems not unreasonable to say that there is neither need nor excuse for a routine use of the proprietary article.

The question of unnecessarily expensive B.P. preparations is governed by the same considerations. Where, through a routine prescription of particular combinations or a mere indifference to cost, costly ingredients are included without improving the therapeutic value of the medicine with reference to the particular patient for whom it is prescribed, a legitimate case for criticism would seem to lie.

Again, an excessive use of flavouring agents may constitute extravagance. In one case where the flavouring agents were six times as costly as the active drugs, the panel committee :—

> "did not contend that sweetening and flavouring agents have not a proper place in the composition of some remedies but that those preparations cannot be placed in the same category, therapeutically, as what they described as 'active' drugs, and that a reasonable moderation should be observed in using them."

Instances have arisen where an expensive medicine is prescribed on the recommendation of a consultant. Here the view of the department is that the consultant's recommendation is clearly a matter of which account must be taken in determining whether the medicine was reasonably necessary, although obviously extravagant prescriptions could not be justified solely by reference to the consultant's advice. Cases have, again, occurred where an unnecessarily high dispensing fee has been incurred. The unnecessary prescription of a preparation in powder or tablet form has, for example, been held to place an unjustifiable charge on the drug fund.

Finally, there is extravagance by unnecessary frequency of prescriptions. Here again, so far as recorded cases go, the abuse has ordinarily been obvious where a penalty has been inflicted. Two typical cases may be quoted. In one case 1 lb. malt and oil was prescribed on the 9th, 15th, 22nd, and 30th of a month, the dosage ordered being such that each prescription should have lasted 17 days ; in the other case eight prescriptions given between the 1st and 25th of a month accounted for a 60 days' supply of medicine. Few doctors would object to such cases being the subject of inquiry and control. More difficult is the problem of the steady increase in frequency throughout the country ; but this is a matter to be dealt with on the basis of broad policy rather than of individual disciplinary action.

The Position Summarised.

A layman must necessarily draw conclusions on this subject with great reserve. On the whole, however, it seems that the cases where surcharge has been upheld by the Ministry are, generally speaking, not such as would regularly occur in the practice of the reasonably careful practitioner ; neither do they appear to afford ground for undue apprehension or for an excessive caution in withholding medicines from insurance patients. The subject has been so overlaid with misunderstanding that an exaggerated complexity has been attributed to it. So far as the doctor is concerned, there seems to be only one standard and one question to be answered : "Is the medicine or preparation which I propose to prescribe reasonably necessary, as regards character and quantity, for the adequate treatment of the particular patient for whom it is to be prescribed ?" If the answer is in the affirmative, the statute and regulations definitely sanction the prescription. It may be said that this is not an easy standard to apply. But is it not, after all, precisely the standard which is daily applied by the many doctors who are supplying medicines at a capitation rate of payment.

New Inventions.

A CUP-AND-BALL ANEURYSM NEEDLE FOR DEEP LIGATIONS.

While investigating a means of tying, from behind, the first part of the left subclavian artery, I asked the students in the dissecting-room of the Royal College of Surgeons, Ireland, to test the description and simplicity of my method. Using ordinary aneurysm needles they tied the vessel correctly, but it was plain that a better tool would have made the task yet more simple. When the needle was threaded and then passed, the ligature lay back along the shaft and was difficult to catch in the deep wound ; while if the needle were passed unthreaded it was not easy to expose and thread the terminal eye.

On experiment I found that an ordinary hooked dental stopping implement passed easily under the artery, and it occurred to me that if the smooth ball-tip of the instrument were detached and pierced like a bead, and if the stem were hollow with a mouth wide enough to seat the ball, the ball could then be strung on a thread passed through the stem. The thread being pulled taut, the ball would be firmly fixed to the cupped end of the stem and the implement could be passed like an ordinary aneurysm needle under the vessel. It would then remain merely to pick up the ball beyond the artery and thus retrieve the thread, which could be done under the guidance of vision or of touch by means of a fine hairpin bent into a sort of elliptical loop. Keeping the thread taut, the ball was first made to enter the wide part of the loop and was then caught at the constriction. The thread was relaxed and the ball withdrawn.

I have had another and smaller model of this needle made for ligating the middle meningeal artery as a preliminary to operation on the root of the Gasserian ganglion or the cavernous sinus. With modern technique the aperture in the temporal fossa has a diameter of about 3 cm., and the artery leaves the foramen spinosum some 5 cm. from the surface of the zygoma. Thus here, too, a deep vessel is tied through a small unyielding gap. Mr. A. A. McConnell and I have found that with my instrument ligation of the artery at the foramen spinosum becomes extremely simple.

These cup-and-ball needles have been made for me by Mr. Edwin Haines, of Dublin.

Arnold K. Henry, M.B. Dub., F.R.C.S. Irel.

THE LANCET.

LONDON: SATURDAY, APRIL 5, 1924.

EMMETT HOLT AND HIS WORK.

In his Goulstonian lectures for 1924 on Some Wasting Disorders of Early Infancy, the first of which is published in our present issue, Dr. Leonard Parsons repeatedly refers to the writings of the late Dr. L. Emmett Holt on the same subject. This is a timely reminder that the death of this eminent physician in Peking in January last, was, at the time, allowed to pass with scant mention either in American or English medical journals, an omission which only the exigencies of distance and the absence of detailed information can excuse or explain. The journey to the East which resulted in the greatly regretted loss of Dr. Holt was undertaken in connexion with an arrangement made with the Union Medical College of Peking to give a series of lectures on the subject of pædiatrics to the students of this older civilisation.

Dr. Emmett Holt, whose place in medicine it will be most difficult to fill, represented a type of physician with which we were until recently quite unfamiliar in this country. He was solely and exclusively what is known in America as a pædiatrist; that is to say, he practised as a specialist in the diseases of children and dealt with no other kind of case. In this respect he differed from his contemporaries in this country who, almost without exception, practise in general medicine as well. He differed also from the German professor of pædiatrics in that he had no research laboratory, and, at any rate, until recently no following of students eager to work for their chief and share with him the crumbs of honour falling from the great man's table. Dr. Holt was pre-eminently a clinical physician with great clarity of vision and a real flair for teaching. His famous text-book on the Diseases of Infancy and Childhood, which has been translated into no fewer than four foreign languages and which has passed through many English editions, has been the sheet-anchor of thousands of medical practitioners in every part of the world. No book has done more to make accessible to the whole profession the many brilliant discoveries which of recent years have illuminated the entire field of pædiatrics. There can be little doubt that the appreciation in which Dr. Holt's writings are held is well justified, for he was a past master of accuracy and clearness of expression. Although he has frequently been described as a great scientist, it is improbable that his eventual claim to fame will rest on this reputation. His practice and teaching were, it is true, based on a sound pathological and physiological groundwork, but he was neither pathologist, physiologist, physicist, nor biochemist; he knew just enough of all these sciences to make him, in view of his enormous clinical experience, a sound practical physician and a first-rate teacher. He discovered no new disease, neither did he lend his name to any new symptom or complex of symptoms, but all the same it has probably been given to few men to make so many comparatively little known diseases among children, comprehensible to others and amenable to treatment. Dr. Holt was 69 years of age when death overtook him in Peking, and it speaks eloquently for the elasticity of his arteries and the adaptability of his mind that during his later years the character of his work became modified and modernised in conformity with the changed conditions of medicine. As one of the original members of the board of directors, and as secretary of the Rockefeller Institute, he began before it was too late to appreciate and participate in research and experimental work of various kinds calculated to throw light on the problems of nutrition, and he collected around him a few of the younger generation of scientists who are able and content to devote their time to research for its own sake. To anyone who compares one of the last of Dr. Holt's publications—namely, a little volume [1] entitled Food, Health, and Growth—with any of his earlier writing this change of attitude, and leaning to the more scientific method, will be abundantly apparent. At the time of Dr. Holt's death he was physician in charge of the Babies' Hospital in New York, to which he devoted most of his time. Previously he held the posts of professor of diseases of children in the New York Polyclinic Medical School and Hospital. During the years 1901 to 1920 he held the post of clinical professor of diseases of children at the College of Physicians and Surgeons.

Although Dr. Holt's personal inclinations were always in the direction of preventive medicine, he played no great part in the world-wide campaign to promote the welfare movement, until the time when two American Associations, the Child Health Organisation and the American Child Hygiene Association, were consolidated and merged in the one society, the American Child Health Association, of which he soon became the moving spirit and inspired leader. It was largely in connexion with the missionary work of this Association that he took his fatal journey to Peking, a journey intended to bring to the youth of an ancient civilisation the inspiring message of American welfare work.

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CANCER AND CIVILISATION.

The incidence of cancer in the different races of mankind has always presented an interesting aspect of the cancer problem. Medical men working among uncivilised races have returned to Europe with the tale that they had seen very few cases of cancer among those peoples. The impression was thus created that cancer was a disease of civilisation. In a sense that must necessarily be true. For cancer becomes increasingly more frequent as age advances, and affects particularly those of middle age, between 45 and 60. Uncivilised races know nothing of time, and cannot give an account of the length of their individual lives. But it is safe to say that civilisation has greatly prolonged our average span of life, and that therefore the number of people likely to be affected by cancer is much smaller in uncivilised races than in civilised races. Morover, civilisation inculcates a respect for age which seems absent from the mind of the tribes that kill their old people when they can no longer take part in the hunting and fighting, and have become a burden to the community. Civilisation tends to work in the opposite direction, and even to sacrifice the young to the old in certain directions. It thus alters the age-constitution of the population in such a way that the absolute number of cases of cancer must necessarily be greater than in an uncivilised population, even if no other factors were operative. If we consider further that in uncivilised regions large areas are sparsely populated, it is easy to see how a medical man working in such a region and trained in a hospital in one of our densely populated towns, may form the impression that cancer is of rare occurrence among uncivilised races.

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[1] The Lane lectures (reprinted) given at the Medical School of the Leland Stanford Junior University in San Francisco.

This alleged freedom from cancer of uncivilised races has been the subject of repeated investigations during the last 20 years. The first comprehensive inquiry was carried out in this country by the Imperial Cancer Research Fund. Cancer was found wherever it was looked for by competent observers, and the fact was established that cancer is a disease common to mankind throughout the world. In so far as African races are concerned von Hansemann came to a similar conclusion a few years later on the basis of material collected from the German colonies. Some interesting results were obtained from those studies concerning the organ-incidence of cancer in different races—results which clearly pointed to chronic irritation as being the determining factor, as exemplified by betel-nut and kangri cancer. But it was also recognised that there was no statistical basis for a comparison of the frequency with which cancer affects uncivilised and civilised races. As we go from the equator to the poles the same story repeats itself. The tale is put about that among Eskimos in Greenland cancer is unknown; the Danish Government appoints a commission to investigate the matter, and cases of cancer are found. Their number was necessarily small because the total population is small, but owing to the special conditions obtaining in Greenland it was possible to make an estimate of the size of the population, and obtain an approximate analysis of its age-constitution. Prof. J. Fibiger, who reported on the results of this commission, was thus led to the conclusion that cancer affects the Eskimos with approximately the same frequency as the Europeans.

The paper by Mr. R. V. Dolbey and Mr. A. Mooro on the Incidence of Cancer in Egypt, which we published on March 22nd, is a further and useful contribution to the subject of the organ-incidence of cancer in the native races of Egypt. These authors state that cancer is less frequent in Egypt than in England, but we can draw no such deduction from the data which they supply, for the number of cancer cases in a hospital does not reflect the incidence of the disease in the whole population, and comparison is hardly admissible between the number of cancer cases in a hospital in Egypt and in England. Even if it were a reflection, it would be of little statistical value, so long as we do not know the size of the population of which the hospital population in Egypt is supposed to be a reflection nor its age-constitution. Of considerable interest, however, is the consideration of the organ-incidence. Perhaps the most striking fact is the relative rarity of intestinal cancer, which the authors attribute partly to the diet. The idea that diet is related to the incidence of cancer of the stomach and intestine has much to commend itself. It is interesting to note that the diet followed by the fellaheen is characterised by an abundance of vitamins, which, as the recent work of McCarrison and of Cramer has shown, are specially concerned in maintaining the functional and structural integrity of the alimentary canal. The further suggestion that the presence of digestive troubles, generally resulting from the mental stress and strain of civilised life, are a condition predisposing to cancer of the alimentary canal is also a reasonable one. On the other hand, if these two factors are really of such ætiological importance as the authors suggest, we might expect to find some clinical correlation from the data in civilised countries between the incidence of intestinal cancer and certain professions, or at least certain physical and mental types of patients. No such clinical evidence appears to exist. The difficulty of correct diagnosis is so great that many cases of intestinal cancer are treated for such a condition as anæmia, and their true nature is first recognised at the post-mortem examination. It would be interesting to know the number of autopsies carried out at Kasr-el-Ainy, for, broadly speaking, the number of cases of cancer recorded by a hospital is in proportion to the frequency with which such examinations are made.

We may have to debit civilisation with creating conditions predisposing to intestinal cancer. But if we do so we must also credit it with diminishing the incidence of other forms of cancer, such as rodent ulcer, cancer of the scalp, or cancer of the bladder. Civilisation may therefore shift the organ-incidence of cancer. It may increase the incidence in one organ and diminish it in another. It cannot be incriminated wholesale as a cause of cancer generally. In fact, it would not be paradoxical to say that the *recorded* incidence of cancer in a community is a measure of its degree of civilisation. The prolongation of life, the ordered communal life which renders trustworthy vital statistics possible, an efficient medical service that ensures accurate diagnosis of a disease which has no characteristic symptomatology, and an intelligent population that takes advantage of such a service:—all these are factors of civilisation which tend to raise the actual as well as the recorded number of cancer cases in a community.

THE DOGS' PROTECTION BILL.

For the modest sum of 6*d*. net there can be obtained from His Majesty's Stationery Office No. 21, Vol. LVI., Parliamentary Debates, House of Lords, in which will be found the proceedings which attended the Second Reading of the Dogs' Protection Bill in the Upper House last week. The Second Reading was proposed by Lord Banbury, who has already stood sponsor for the measure on previous occasions in the House of Commons, and the debate which followed his Lordship's introduction was a model of the way in which a far-reaching subject, touching at one end our commonest instincts and at the other our highest scientific equipment, should be conducted. The speakers were eloquent, and on both sides it may be freely conceded that the purpose of their words was elevating and humane. Lord Banbury in his plea for the Bill had, of course, to rely upon the age-long friendship between the man and the dog for his arguments against the employment of dogs in physiological experiments. His words were frankly addressed to the heart, and were reinforced by apt and moving citations from the written and spoken words of others. Indeed, for his purpose, it would be well if his Lordship attempted to employ no other arguments than those supplied from literature or drawn from the common knowledge that we all accept the dog as a friend, for when he brings up his scientific battalions their fighting quality is unimpressive.

Once again we must protest against the implied use of The Lancet as among Lord Banbury's scientific supporters of the Dogs' Protection Bill. Though we claim as high a degree of affection and respect for the dog as his Lordship himself, we are out of place in that category, while the appearance of The Lancet as, though involuntarily, being one of his backers, can only be due to a suppression of facts. In The Lancet of May 31st, 1919, we published a memorandum issued by the Medical Research Committee upon the Dogs' Protection Bill, and in an editorial note upon this

Memorandum the following two consecutive sentences occurred :—

> "The Memorandum of the Medical Research Committee which we also print in substance this week demonstrates, without reasonable pretext for gainsaying, that the experimental use of dogs has advanced our knowledge and has been of benefit to suffering humanity. This is not to say that such knowledge could have been acquired in no other way."

The meaning of the extract quoted was and is perfectly clear to a medical audience, and it is simply not the fact to suggest, as Lord BANBURY has done, that, perhaps without knowing what we were doing, we have supported his measure. The impression produced by a verbatim quotation of the second sentence, while omitting the first or only alluding in some general way to its content, is a grave misrepresentation.

We need not recapitulate in these columns the undoubted benefits both to the man and to the dog which have accrued from scientific experiments upon canine subjects. The story of the researches into diabetes and rickets, for example, are familiar to all our readers and no better summary of their results can be found than in the official report to which we have referred above. Such information is there resumed with clearness and accuracy by Lord KNUTSFORD and Lord RAYLEIGH. We know of no other way as yet in which such valuable knowledge could have been acquired save by using the dog as the test object. But this is not to say that in time to come some future scientific developments may not enable analogous researches to be undertaken upon lowlier animals, nor, indeed, that the use of any animal as a test object may not be superseded in some experiments where it must now be employed.

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ADVERTISING HEALTH.

THE Glasgow Public Health Department have made a new departure by issuing a monthly health bulletin. We have received copies of the first two issues. Each consists of four pages. The first page deals shortly with diseases which have been prevalent or to which attention has been drawn during the month. The second page deals with birth- and death-rates during each of the four weeks. The infant mortality-rate might be added to this statement with advantage. The third page gives the notifications of disease and meteorological records week by week, and the fourth page the addresses and hours of the various infant welfare centres and tuberculosis dispensaries. The first issues are being sent to the consulates, public libraries, and medical practitioners, and also to anyone who writes expressing a desire to be supplied with them. These issues are couched in technical language, and seem intended chiefly for medical practitioners and others who have made a special study of public health matters, but there seems to be no reason why a health bulletin of this kind should not be made much more attractive with a view to arousing the interest of a wider circle; in fact, of every intelligent citizen. We all recognise that the public health depends mainly upon the effort of each individual to lead a healthy life, and such a bulletin might make a much more direct appeal to the individual. For example, each bulletin might be associated with a motto or a tilt against some prevailing habit inimical to communal health. Both the United States and Canada have developed this idea of advertising health much more than we have, and we might well take a leaf out of their books. We think there are great possibilities in front of the health bulletin; it should, however, be not only a more or less dismal record of the prevalence of disease, but also an inspiration towards more abounding health.

Annotations.

"Ne quid nimis."

THE PANCREAS IN RELATION TO DIABETES MELLITUS.

THE starting-point of our knowledge in the ætiology of diabetes mellitus is usually stated to be the discovery by Mering and Minkowski in 1899 that extirpation of the pancreas led to the disease. Although this observation was the first experimental proof of the association between the pancreas and diabetes, the idea was much older. Thus, Conrad Brunner, over a hundred years before these investigators, attempted to prove that the pancreas was concerned with glycosuria, and early in the nineteenth century Richard Bright prepared a specimen for the Guy's Hospital Museum "to show the relationship between the pancreas and diabetes." The specimen consisted of a fibrosed pancreas. Another point sometimes overlooked is that neither Mering nor Minkowski associated the islets of Langerhans with diabetes, but attributed the anti-diabetic functions to the whole organ. The truth of this statement is borne out by the appearance of a large number of papers at that date giving the clinical results of treatment by oral administration of the whole gland. It was not until several years later that Opie and others called attention to the possibility of locating the anti-diabetic function in the islets described by Langerhans in 1860. This view was supported by the contemporary work of Laguesse, who proved that the degeneration caused by ligation of the duct did not affect the islets, and later by the work of Rennie and Fraser on the islets of teleostean fishes. The Toronto workers have also supported the classical views, since they state that, in fish pancreas, insulin is found almost exclusively in the main islet. As the result of histological and experimental evidence, it has become an accepted fact that the anti-diabetic hormone is secreted by the islets, and that diabetes mellitus is due to some demonstrable lesion or functional derangements of these organs.

It must not be supposed, however, that the independence of the acini and islets has been unchallenged. Many workers have been opposed to this doctrine, and in our present issue an article by Prof. Horst Oertel appears, in which the case against the islets is marshalled. The evidence in favour of the independence of the islets is stated, and is criticised point by point. The work of Milne and Peters is quoted fully, in which it was shown that definite connexions between the islets and acini could be demonstrated by serial sections. Furthermore, in the histological examination of sections showing pancreatic degeneration due to any cause, it is possible to see acini taking on the appearance of islets, and islets disappearing. Special staining reactions give no definite demonstration, and hence do not afford support to the classical views. Prof. Oertel has, indeed, set out a strong case to show that the islets are really part of the general parenchyma; at any rate, the evidence upon which the orthodox view rests is quite flimsy. The author stresses the idea that diabetes is due to excessive breaking down of glycogen, and that insulin acts by inhibiting this. It has been shown by most workers, however, that glycogen disappears from the liver in insulin convulsions, and the greater part of the experimental evidence on the pharmacological action of insulin does not support such a theory. We have, however, no definite proof that insulin is a secretion from the islets of Langerhans. Collip has obtained insulin in small quantities from many animal tissues, and bodies very similar to insulin from plant sources. Prof. Oertel's suggestion that the insulin action is a general cell function, and the fact that active material can be prepared from any animal organ, both raise speculations as to whether the pancreas possesses the monopoly for making this substance. There is no conclusive evidence that the pancreas alone can form insulin.

The whole question of the pathology of diabetes and of the pharmacological action of insulin is in the melting pot, and perhaps it is as well that the foundations of the classical views are being thoroughly exposed for inspection.

AN INVESTIGATION INTO BRONCHO-MONILIASIS.

A LABORIOUS investigation recorded in the *Medical Journal of South Africa* (Vol. XIX., p. 101, November, 1923) by Dr. A. Pijper suggests that bronchomoniliasis is neither a clinical nor a pathological entity. The Unna-Pappenheim method for staining the Ducrey bacillus was found to be a useful differential stain for monilia fungi, and its value was confirmed by the results of applying a special culture method, using an acid medium (pH2). In the course of 67 consecutive examinations of sputum, mostly undertaken to try to confirm a clinical diagnosis of pulmonary tuberculosis, Dr. Pijper was able to demonstrate by these methods the presence of monilia fungi in 36 cases. Having endeavoured unsuccessfully to grow monilia fungus on suitable media exposed to the air of the laboratory, though a large number of other fungi were grown in this way, he concludes that this fungus is not omnipresent, and that its incidence in sputum collected with the usual precautions may safely be ascribed to the patient. The severity of the symptoms occurring in the patient examined could not be correlated with the number of fungi found in the sputums, which varied considerably. Forty-three different species were differentiated by biochemical methods, and an attempt was made to estimate the pathogenicity of various strains by inoculation into the trachea of rabbits. No relation could be established between pathogenicity and cultural, biochemical, or morphological characteristics. In some rabbits lesions were produced by strains derived from milk or from human sputum where monilia was present in small numbers; whereas monilia which appeared in large numbers in human sputa sometimes had no effect on a rabbit. Dr. Pijper concludes that we possess no means of distinguishing between saprophytic and pathogenic monilias, and that it is doubtful whether the pathogenicity can be held to be dependent on the number of monilià elements present. He describes certain morphological characteristics of a constant nature on which, he suggests, a division of the monilia group might with advantage be founded.

X RAY DISEASE OF THE LARYNX.

X RAY disease of the larynx is an illustration of the common phenomenon that the rare disease discovered yesterday is the common disease of to-day. Four years ago severe X ray disease of the larynx was practically unknown, yet in the interval more than a dozen cases have been reported, and doubtless many others have been recognised but not published. A paper by Prof. Ove Strandberg in *Ugeskrift for Laeger* for Feb. 28th summarises the already bulky literature of this new subject and deals with the difficulties of the differential diagnosis as illustrated by a case sent to the Finsen Institute in Copenhagen with the diagnosis of tuberculosis of the larynx. The patient was a man aged 41, who, two years earlier, was operated on for a gland in the neck. As the operation wound broke down 14 days later, he was given X ray treatment in February and March and again in June of the same year (1922). In April, 1923, the destructive changes found in his larynx were diagnosed as tuberculous, but a careful examination in the Finsen Institute gave no support to this diagnosis, nor to that of syphilis or malignant disease. Exploratory excision and microscopic examination left no doubt that the ulceration and necrosis of cartilage were the outcome of the X ray treatment (the dosage of which is not stated), although there had evidently been an interval of several months between the last exposure and the development of the characteristic X ray changes. Prof. Strandberg classifies the X ray reactions of the larynx in three groups. The first includes the numerous and long-known cases characterised by hoarseness and œdema occurring from one to three days after an exposure, and lasting only for as many days. This reaction is generally regarded as harmless, and it has not been known to necessitate tracheotomy on account of œdema of the larynx. The second group includes those reactions which occur 10 to 20 days after an exposure, the patient suffering from a laryngitis sicca and, in some instances, from hoarseness and œdema of the larynx. Though this condition may be serious, it usually subsides in 10 to 14 days, but even though only a single exposure has been given, the œdema may necessitate tracheotomy. While the reactions in the first two groups are comparatively harmless, the reaction in the third group is often rapidly fatal. How long after a single exposure or a series of exposures this reaction may begin is not yet known; the longest interval hitherto recorded would seem to be 12 months (van Rossem's case [1]) and the shortest interval four weeks. Whereas in the first two groups the reaction occurs chiefly in the skin and subcutaneous and submucous tissues, the reaction in the third group involves muscles, cartilage, and glands which undergo necrotic changes. Tracheotomy and other operations in such cases are apt to be disastrous, as X ray ulcers may develop in the operation wounds, and for the same reason laryngectomy is contra-indicated. With regard to the dosage of the X rays, it is disconcerting to find that in none of the 13 cases collected by Jüngling was the dosage in excess of that commonly regarded as within the limits of safety. This disease may apparently develop in any case if the X rays traverse the region of the larynx, whether they be given for glands in the neck, sycosis, cancer, or any other disease. As for cancer of the larynx, Jüngling attaches so much importance to the risk of X ray disease as a sequel to X ray treatment that he insists on never giving it for a cancer of the larynx which is operable. Before more is known of the conditions under which X ray disease of the larynx arises, many of us will assuredly experience a certain dilatory inhibition when X ray treatment is recommended for morbid changes which occur in the neighbourhood of the larynx and which are amenable to less risky treatment.

LATE SERUM SICKNESS.

Dr. T. T. Crooks,[2] of the Durand Hospital of the John McCormick Institute for Infectious Diseases, reports the case of a woman, aged 26, who developed acute pharyngitis with œdema of the uvula. She had had two courses of toxin-antitoxin and was negative to the Schick test, but as she had been intimately associated with cases of diphtheria she was injected intramuscularly with 20,000 units of diphtheria antitoxin. Cultures from the nose and throat showed no diphtheria bacilli, but numerous hæmolysing streptococci. Four days after the injection urticaria appeared at the site of injection and in another three days became generalised, when the patient suffered from continuous nausea and vomiting and became cyanosed and pulseless. Atropine and epinephrin were given hypodermically, and the patient rallied, but was tormented for five days by the urticaria, which was only relieved by injections of epinephrin. From the second day of the urticaria she had very severe muscular and joint pains. The temperature ranged from 99·2° to 103° F. The blood showed a leucocytosis of 18,100 at the onset of the urticaria with 72 per cent. of polymorphonuclears, 25 per cent. large lymphocytes, 2 per cent. small lymphocytes, and 1 per cent. eosinophils. The remarkable feature of this case was that a reaction of such severity did not become severe until seven days after injection. It is possible that the antitoxin in the toxin-antitoxin mixture given two years previously had sensitised the patient, though no previous example of such sensitisation has been recorded.

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[1] Journal of Laryngology, September, 1923.

[2] Journal of the American Medical Association, Jan. 12th, 1924.

CARBON TETRACHLORIDE AS A REMEDY AGAINST INTESTINAL PARASITES.

IT is difficult in England to realise the importance which intestinal parasites play in tropical medicine. The difficulty of treating these parasites by vermifuges is considerable, and it is not surprising that new remedies are constantly making their appearance. The introduction in America of carbon tetrachloride for the treatment of ankylostomiasis,[1] and the extremely successful results reported from its use by mouth in doses not exceeding 3 c.cm. for an adult, is interesting in view of the well-known toxicity of this drug. In 1909 a death occurred whilst it was being used for "dry shampoo" purposes in a hairdressing establishment, and as a result of the publicity given to the matter by the coroner's inquest it is probable that it has been almost entirely abandoned for this purpose. In 1914 Sir William Willcox recorded a case of death due to this substance occurring in a man using it whilst working in an aeroplane factory, and in 1915 the same observer described in our columns[2] a number of cases in aeroplane workers. Toxic jaundice was the characteristic symptom, and post-mortem examination showed diminution of the size of the liver, marked degenerative changes of liver, kidney, and heart, and the deposition of fat in these organs. If the patients lingered some time before death there was much less fat, but there was marked destruction of liver cells, their place being taken by newly formed fibrous tissue, "replacement fibrosis." Trinitrotoluol, dinitrobenzene, arseniuretted hydrogen, phosphoretted hydrogen, arsenobenzol derivatives, and many other compounds may cause similar results. Recently, in view of this use of carbon tetrachloride, Meyer and Pessoa have carried out a number of experiments on dogs, by the administration of this substance to them in varying amounts, with a view to ascertaining the toxicity and suitable dosage of the drug, and, in the majority of experiments, obtained lesions similar to those described by Willcox. They conclude: (1) That carbon tetrachloride has a toxic action on dogs when administered orally; (2) that the presence and extent of the lesions vary in proportion to the amount of the drug given; (3) that with the same dose the lesions are more severe the older the animal (a point to be borne in mind when large-scale sanitary campaigns are being planned—i.e., when it is proposed to treat the whole population of any given area); (4) that the administration of an oil or saline purge with the drug tends to diminish its toxic action; (5) that the doses recommended by M. C. Hall (who introduced the remedy) are probably too large, since, when treating a group of cases by Hall's method, three cases of lumbar pain occurred (one with hæmaturia), and other symptoms occurred in other patients; and (6), that carbon tetrachloride is indeed a powerful vermifuge to ankylostomiasis. P. D. Lamson and others, writing in 1923, have also studied the oral and intravenous administration, and by the latter method found that 0·154 c.cm. of the drug per kg. of body-weight was lethal. They also found that the pathology consisted essentially of damage to the liver, one of the first manifestations of which was the appearance of abnormal amounts of bilirubin in the blood. They used carefully purified carbon tetrachloride. L. E. Warren in 1923, having regard to this treatment, discusses the purity of carbon tetrachloride and points out that, as this drug is usually manufactured by chlorinating carbon disulphide, the likely impurities are chlorine and carbon disulphide. The former is rare, but the latter common. Nine samples of the drug were examined; one was free from carbon disulphide, and the remaining eight contained amounts varying from 0·015 to 0·27 per cent. of carbon disulphide. Although there is no doubt that carbon tetrachloride is responsible for the lesions described, it seems important that pure samples of the drug should be used. From the above considerations it seems doubtful whether carbon tetrachloride given in amounts sufficient to act as an efficient vermifuge is a safe drug to employ.

MASS METHODS IN MEDICINE.

WITH the growth of knowledge of the morbid physiological processes which constitute disease, and the elaboration of methods for investigating and assessing them, the art of diagnosis has reached a complexity undreamed even 30 years ago. There can be no hope of return to the days when a cultivated power of observation sufficed to the diagnostician; though, on the other hand, the day will certainly never come when the physician will be able to dispense with that same power of observation in favour of some trick done with a test-tube or burette. As knowledge progresses, however, it is probable that matters will become somewhat more simple; already this process is showing its results in treatment, and to some extent the complexity of present-day diagnostic methods as compared with those of former times is offset by the simplification in recent years of modern therapeusis. With the multiplication of special departments for diagnosis and treatment, the problem of their correlation so as to secure results in the most efficient and economical manner becomes pressing. For the guidance of the specialists there exist whole libraries of manuals, mostly excellent. For those responsible for the correlation of the various departments, however, works of guidance have, up to the present, been lacking, and proportionate welcome will be afforded to an attempt by Dr. George R. Herrman[1] to supply a concise but comprehensive statement of the arrangements for diagnosis and treatment of patients in the service of Dr. George Dock at the Robert Abbott Barnes Hospital, St. Louis. The book had its origin in a series of typewritten sheets of rules and suggestions supplied to the house staff by Dr. Dock when he was attached to the medical school of Washington University. By accretion these grew into the manual which in its present state affords a complete system of hospital management from the standpoint of the chief physician and his assistants.

One of the points of particular interest in this work is the light which it throws upon the way in which problems common to all great hospitals are dealt with in one particular instance. The American system of arranging the work of the house staff is described in Part I., which is devoted to administrative methods and contains rules for the guidance of all members of the medical staff from the resident physician to the clinical clerks. It is interesting to note that search is almost vain for rules for the conduct of the medical student; apparently he is not so important a person in the American as in an English medical school. Almost the only reference to his duties in Dr. Herrman's book occurs on p. 31, where he is instructed to step promptly to the bedside and give the patient's name. Most of the other things which in an English hospital are, or ought to be, done for the patient by the student seem in America to be done by the "interne." There may be some doubt as to which system is the better for the patient; there can be none as to which is better for the student. Suggestions as to case-taking and a description of the simpler routine methods of laboratory investigation are also included in this section. In Part II. are described the special laboratory methods of investigation of cases of all types in general use in the hospital. Together with the last part of the preceding section this constitutes a complete manual of clinical pathology, the peculiar value of which is that it has been compiled by physicians as the result of their experience of the utility of the methods described. Parts III. and IV. are devoted to dietetics and therapeutics. As to the latter, it is significant that it is the shortest section in the book. The number of drugs recommended for use is strictly limited, and it is urged that they be prescribed separately. One of the less fortunate effects of specialisation is evident in the chapter on hydrotherapy which includes the Scottish douche, the whirlpool bath, and other tempests in teapots, but in which the sponge and blanket bath escape all mention. In the section on dietetics are given extensive tables of the caloric equivalents of most of the foods in ordinary use in this country and America. Diets are given for almost every type of case from diabetes to constipation. In bringing together in a remarkably concise manner a large amount of information now dispersed in various manuals and journals, this section is of particular value. In the last part the actual forms and graphic methods used in recording all the facts concerning a patient are illustrated; as they number 74 it may be assumed that the Barnes Hospital will from time to time require new buildings to house its records.

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[1] THE LANCET, 1922, i., 391.

[2] Ibid., 1915, i., 545.

[1] Methods in Medicine. The Manual of the Medical Service of George Dock, M.D., Sc.D., formerly Professor of Medicine, Washington University School of Medicine. By George R. Herrman, M.D., Ph.D., Instructor in Medicine, University of Michigan. London: Henry Kimpton. 1924. Pp. 521. 30s.

This book may be said to be unique in the sense that nothing of the sort has been published before. That there was need for such a manual there can be no doubt, and this volume should prove of the greatest value to all responsible for the conduct of institutions, be they public or private, for the care of the sick.

LUES AND "LUETISM."

We have received from Prof. Eugene Hertoghe, of Antwerp, and Prof. William Seaman Bainbridge, of New York, a joint communication entitled "Lues and Luetism," in which the writers wish to stress the following points:—

1. Non-malignant duodenal and gastric ulcers are more often of a syphilitic origin than is generally recognised.
2. Duodenal and gastric ulcers have frequently healed under the administration of bismuth which has recently been proved of anti-luetic value.
3. These ulcers may be due to an underlying factor non-reactive to any test, which the authors term "luetism."
4. Necessity for standardisation of the Wassermann technique, it being recognised that a positive Wassermann is merely a link in the chain of evidence of syphilis. "Moreover a possible form of lues which may have been modified by passing through many generations—'luetism'—might prove peculiarly non-reactive to the Wassermann or any other known test for syphilis."
5. Because iodine has been helpful in abnormal thyroid, the cause of this abnormality may be in many cases "luetism," the improvement in the physical and mental state under iodine being often due to the anti-luetic action of the drug.
6. "Luetism" may cause gastro-intestinal disease, accompanied by psychopathic states, and its recognition may be the explanation of these conditions. Syphilis causes much trouble in the blood-vessels and frequent mental disorders.
7. Finally, no one cause will explain all disease, and the underlying factors in each case must be thoroughly investigated.

It will be seen that these points are put in very guarded language, and there is nothing in the paper to show, for instance, how often duodenal and gastric ulcers are of syphilitic origin. Bismuth certainly has been found of value in these ulcers, but it is arguing in a circle to assume that because bismuth is also useful as an anti-syphilitic remedy, therefore these ulcers are of syphilitic origin. The same method of reasoning is applied to iodine and abnormal thyroid function.

The authors wish to add to medicine, already overburdened with vague conceptions, a new complex "luetism," non-reactive to any known tests, but an underlying factor in many conditions—a syphilis, in other words, that is not syphilis. "The basic purpose of this paper is to stimulate interest in certain very promising fields of medical research, and perhaps to contribute something towards the final solution of this multiplex problem of *syphilis*." We agree that to stimulate interest in any field of medical research is a worthy object, but we must express a doubt whether this is best achieved by the making of hypotheses incapable of being put to proof.

MATERNAL MORTALITY.

The third of a series of reports[1] by Dr. Janet Campbell, a senior medical officer of the Ministry of Health, on the problem of maternal mortality has just been issued. Mr. Wheatley, the Minister of Health, who contributes a prefatory note, reminds us that Miss Campbell's two previous reports dealt respectively with the education of the medical student and the training of the midwife in the science and art of obstetrics. The present memorandum is concerned with the cause of excessive maternal mortality and the means for its reduction, the subject being reviewed from the public health rather than from the clinical aspect. Briefly, the evidence furnished in this exhaustive inquiry shows that the mortality-rate of women from childbirth is unnecessarily high in England and Wales, which is the area covered by Miss Campbell's investigation. The problem of excessive maternal mortality and morbidity is common to all parts of the country, although, generally speaking, the mortality tends to be highest in sparsely populated rural counties and in industrial districts, notably those associated with the textile industries of Lancashire and Yorkshire and with coal mining, and tends to be lowest in the south of England, in London and the districts around it, and in certain large towns such as Birmingham, Liverpool, and Manchester. Apart from the disturbing mortality figure, approaching 4 per 1000 births, it would appear certain that large numbers of women are injured at the time of childbirth and that this injury, however slight it may appear at the time, leads to much suffering and economic distress, none the less real because in many families it may not be ever traced to its actual source.

The difficulty of assessing the general causes which influence maternal mortality is admitted by Miss Campbell, but she has satisfied herself that the adequacy or otherwise of the professional attention given during pregnancy and at the time of birth is a weighty factor. In a large number of maternal deaths there has been at some point a failure in proper supervision. Often the omission occurs before childbirth; there has been a lack of antenatal watchfulness, and what might have been a comparatively simple event becomes one of desperate urgency. Familiar instances are the failure to handle a difficult case with due skill and judgment; failure to take satisfactory antiseptic precautions, especially when operative measures are concerned; failure subsequently to examine the patient with sufficient thoroughness and so to ensure the repair of injury. Omissions such as these may readily lead to a fatal termination. In other instances an adverse result may be almost unavoidable. For example, in an isolated district it may not be possible to obtain medical help in time; expert medical advice or hospital accommodation may not be available for a complicated case, while the patient herself may be to blame for neglecting to take reasonable precautions. Curiously enough, insanitary conditions appear to have less direct influence upon puerperal mortality than might be supposed; nor has employment of married women had direct influence upon the maternal death-rate, at any rate as far as the nature of the occupation is concerned, though the double strain of housework and outside employment may impose too heavy a burden upon the mother with diminution of her powers of resistance.

Miss Campbell's suggestions for securing reduction in puerperal mortality and morbidity are set out under three main headings: (1) Improvement in the quality of professional attendance; (2) action through the public health department of the local authority; (3) social and educational measures. Under the first heading she urges adequate education of the medical student and better training of midwives; also the employment of the trained midwife for maternity nursing with the consequent disappearance of "nursing" by the unqualified handy-woman. Closer coöperation between practitioner and midwife, between professional attendants and local authority are greatly to be desired. The public health department of the local authority can assist preventive midwifery by organising ante- and post-natal care of pregnant women at maternity centres. More maternity beds are needed for observation, isolation, and treatment of complicated cases, and for the accommodation of women who cannot safely and suitably be confined at home. A sufficient service of competent midwives should be assured to women confined in their homes, if necessary by subsidy of the midwives practising in sparsely populated districts or by assisting the formation of district nursing associations. The attendance of a midwife, the assistance of a trained nurse, and the advice and treatment of a medical practitioner should be available for all necessitous patients requiring such services. Maternal deaths due to childbirth should be investigated by the medical officer of health, also all cases of puerperal infection, whether fatal or not. Amendments may be desirable in the existing provision for the notification of puerperal fever. Social and educational measures include the provision of suitable nourishment for necessitous expectant and nursing mothers, extension or modification of sickness benefit during pregnancy, and widespread propaganda.

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[1] Reports on Public Health and Medical Subjects. No. 25. Maternal Mortality. By Janet M. Campbell, M.D., M.S. Ministry of Health. London: H.M. Stationery Office. 1924. Pp. 112. 1s.

The inquiry is not yet complete. Miss Campbell proposes to report later on the clinical aspect of mortality in childbirth. The matter deserves attention, for whereas infantile mortality has diminished by one-half during the last 20 years, maternal mortality has remained almost stationary. And the reproach is not limited to this country, but applies equally to all the English-speaking countries. If the figures can be trusted, Scandinavia provides an example to emulate.

THE PART-TIME M.O.H.

MANY of us have viewed the supersession of the part-time medical officer of health with regret, but for some time it has been evident that in communities of a certain size a whole-time administrator for public health purposes has been necessary. The borough of Enfield, we learn from the *Enfield Gazette and Observer*, is divided in its opinion as to the advisability of agreeing with the view of the Ministry of Health and appointing a whole-time medical officer; and we observe that our contemporary is advocating that one of the largest parishes in England should be satisfied with the services of a part-time medical officer on the ground of economy. The argument of economy can be carried too far. The Ministry of Health would be responsible for a large proportion of any whole-time salary; while, efficiently conducted as the sanitary business of Enfield appears to be, there may arise at any time situations with which no one but a whole-time and expert sanitarian can deal, when, if the results to the community were very expensive, the authorities would be held responsible. The part-time medical officer of health coöperates admirably with county authorities in rural neighbourhoods, but urban conditions impress upon communities the need for conformity with their similars, so that a well-staffed service may maintain the public health of the country.

A MEETING of the Fellows of the Royal Society of Medicine will take place at 1, Wimpole-street, London, W. 1, on Thursday, April 10th, at 5 P.M., with Sir William Hale-White, the President, in the chair, to meet the foreign medical officers of health now in this country, and to hear a lecture communicated by Dr. L. Rajchman, Director of the Health Section of the League of Nations, on the Health Organisation of the League. A preliminary address will be given by Mr. John Wheatley, the Minister of Health.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXV.

THE TREATMENT OF FUNCTIONAL DISORDERS OF THE HEART.

BY the term "functional disorder of the heart" is meant a condition in which the patient suffers from symptoms suggestive of heart disease, but in which his heart and arteries are healthy. The chief symptoms of which the patient complains are breathlessness, precordial pain, palpitation, giddiness, and exhaustion; these are caused or aggravated by exertion, and are accompanied by a quickening of the pulse greater than that found in health. Other features sometimes associated are: (1) signs of defective vaso-motor control, such as flushing of the skin, or, on the other hand, coldness of the extremities occasionally with local cyanosis. Attacks of syncope may occur as the result of transitory disturbance in the cerebral circulation; (2) symptoms of functional nervous disorder, such as nervous irritability or nervous exhaustion; headache and sleeplessness are common.

It must be emphasised that the symptoms described may form part of the clinical picture of many diseases; in the early stages of phthisis, for example, the circulatory symptoms may overshadow those directly due to the condition of the lung. It is obvious that before deciding that a patient is suffering purely from a functional disorder of the heart, the physician must exclude organic disease, not only in the heart, but in other situations as well.

Treatment may be considered under four headings: (1) reassurance; (2) rest and graduated exercise; (3) drugs; (4) removal of any cause likely to aggravate the symptoms.

Reassurance.

Anxiety about the state of the heart is present in varying degree in most patients, and it is essential to remove this. Reassurance must be given wholeheartedly, if the patient is to be convinced that he has not got heart disease; to say that there is no organic disease, but that the heart is "weak," "strained," or "flabby," does not carry the necessary conviction; the patient must be made to realise that his heart is absolutely healthy. Other methods of treatment are sure to prove unavailing until the patient's mind is set at rest, and in mild cases reassurance alone may be all that is necessary.

Rest and Graduated Exercise.

Rest in bed is definitely harmful to the large majority of patients; in a few of the most severe cases it is occasionally beneficial, but must not be prolonged.

Graduated exercise is an essential part of treatment in every case, but the best method of prescribing it varies. The patient should take the maximum amount of exercise of which he is capable without experiencing actual distress; if he oversteps this limit, his condition may undergo a slight but temporary deterioration, but no permanent damage, comparable to that which might result in a case of organic heart disease, follows. The tendency in most patients is rather to under-estimate the amount of exercise of which they are capable, and it is important to decide for each individual how far this is the case. This may be judged partly by a general estimate of the mentality, and partly by some such method as the following: the patient is told to step on and off a stool until he feels discomfort; the appearance of the patient when he stops, the character of his breathing, and his pulse rate show how far his distress is real. If he appears to be a man who does not complain unnecessarily, it is sufficient to tell him to take regular outdoor exercise, preferably of a kind that has some objective, such as golf or gardening, and gradually to do more as he finds that he can.

If, on the other hand, he complains of distress before any objective signs are apparent, he is probably a man who, if left to "train" himself, will not attempt an amount of exercise sufficient to ensure the maximum degree of improvement. In such a case, the best results will follow upon making him do a series of exercises every day under supervision. This can be obtained either by the physician seeing the patient at intervals or by a masseuse trained in giving graduated exercises: but in the latter case it is important that the physician himself should give instructions as to how much exercise the patient is to do, and how quickly the amount should be increased.

Universal rules for graduating the exercise cannot be set down, but the following will be found suitable for most patients. The scheme of exercises should last 15–30 minutes, and should include one exercise lasting 2–4 minutes, sufficiently severe to cause slight dyspnœa but not actual distress. This exercise will generally be found to be one which raises the pulse to a rate between 130 and 150 per minute;[1] two minutes after the exercise is over, the rate should not be more than 10 beats above the rate counted before exercise. (It may be urged that this rule places too much reliance on the pulse rate as the mark of the first sign of distress; possibly more attention should be paid to the facial expression and respiration, but it is much more difficult to appreciate the indications that these afford than to count the pulse; for this reason the pulse rate is in most cases a more satisfactory guide for the masseuse.) The hardest exercise should be done once or twice during each treatment; the other exercises should be easier. Stepping on and off a stool is a convenient form of the hardest exercise, for it is easy to increase it by a known amount; as the patient improves it is found that the stepping has to be done at a faster rate to get the desired effect on the pulse and respiration. A further advantage of grading the exercise in this way is that it affords a rough measure of the degree of improvement, obvious not only to the physician, but also to the patient; the latter is made to realise that he is becoming capable of a greater amount of exercise in a given time, and this has an excellent mental effect. Massage itself is of no value, and the so-called "Local Heart Treatment," which consists of different varieties of massage over the precordial area, is definitely harmful; it merely directs the patient's attention to his heart, and increases the difficulty of convincing him that heart disease is not the cause of his symptoms.

Drug Treatment.

The only drug of much value is bromide, and it can conveniently be combined with arsenic. Drugs of the "tonic" type may contribute to the sense of well-being, and may in this way be useful; probably none of them directly increase the patient's capacity for exercise. Various endocrines have been advocated, particularly thyroid, but there is no very definite evidence in their favour, and personally, I have never been convinced of their usefulness. It has been clearly shown by Lewis and his co-workers that digitalis is useless.

Treatment of Conditions likely to Aggravate the Symptoms.

It is not possible in a short space to give a comprehensive list of the various conditions which may aggravate the symptoms, much less to discuss their treatment. There are few diseases, even the mildest, whose effects are not reflected to some extent in the cardiovascular system, whether it is normal or not, and if observations are made on an individual's response to effort over a prolonged period, it is found that it is impaired by such trivial causes as a bad night or a slight headache. It is obvious, too, that a surgical disability, such as flat-feet, will cause an increase of pulse and respiration rate on exercise greater than normal by imposing a mechanical disadvantage on the muscles involved or by producing pain.

Certain conditions must, however, be particularly looked for, as being especially likely to contribute to the severity of the symptoms. Chief among these is septic absorption from such foci as the teeth, a nasal sinus, or even a "chronic appendix"; I have known cases where the eradication of a source of chronic infection has resulted in the disappearance of all cardiac symptoms without any further treatment. Any catarrh of the respiratory tract will increase breathlessness, but it is not so generally recognised what relief may be given by remedying structural conditions causing partial nasal obstruction.

Allusion has already been made to the important part played by defective vasomotor control, and the consequences of this are very apt to result from the effect on the vagus of any kind of gastric disturbance. The treatment of any coincident dyspepsia must, of course, vary in different cases, but as a rule these patients should be advised to drink between and not with their meals, to restrict carbohydrates and foods leaving a large undigested residue, such as cabbage or lettuce. Restriction in this respect, however, must not be too rigid in patients with a tendency to constipation. Such patients should also be warned against taking exercise directly after meals, particularly if they are liable to attacks of fainting. Visceroptosis is another abdominal condition that may require treatment, particularly if it is associated with a weak abdominal wall, which allows pooling of the blood in the splanchnic area, with consequent starvation of other parts of the body. Much discussion has arisen as to the part played by functional nervous disease in the production and aggravation of the symptoms, but probably most physicians would agree that while functional nervous disease may be associated with circulatory symptoms, circulatory symptoms by themselves rarely give rise to nervous symptoms other than anxiety about the state of the heart. It is important to assess the nervous factor at its proper value and to determine in every case: (1) whether the only nervous symptom is anxiety about the state of the heart; (2) whether the circulatory symptoms are primarily due to functional nervous disease, such as a general exhaustion state; or (3) whether the nervous symptoms are simply an associated condition, possibly produced by the same etiological factors as the circulatory symptoms. The answer to these questions must profoundly modify treatment, notably as regards the advisability of rest in bed; the management of the first has already been sufficiently indicated under the heading of "Reassurance"; the treatment of the other two is beyond the scope of this article.

G. H. HUNT, M.D. Oxf., F.R.C.P. Lond.,
Physician, Guy's Hospital.

SHORT COURSE OF INSTRUCTION FOR MAGISTRATES.—A short course of instruction for magistrates in connexion with their duties under the Lunacy and Mental Deficiency Acts was held at the Royal Sanitary Institute, under the auspices of the Central Association for Mental Welfare, from March 18th to 21st. It was the first course of the kind to be given in this country and aroused much interest, and although the number of justices attending was relatively small, it is felt that a beginning has been made in what may prove to be a work of very great importance. In all, 28 justices, men and women, took part in the course; the majority of these came from various parts of England, but one was from Nigeria and two came from South Australia. The instruction given consisted of eight morning lectures, supplemented by afternoon visits of small groups to various prisons, remand homes, mental hospitals, and other institutions. Sir Leslie Scott, K.C., M.P., gave the inaugural lecture on Legal Responsibility and Mental Deficiency; Dr. J. G. Porter Phillips gave three lectures on mental disorders, dealing especially with their medico-legal relationships; Dr. A. F. Tredgold dealt with the subject of mental deficiency in three lectures, dealing in detail with the subject of defective delinquents; and Dr. F. C. Shrubsall gave one lecture on Legal Administration under the Mental Deficiency Act. It was felt that the course proved a means of giving valuable information on the subjects of lunacy and mental deficiency, thoroughly justifying the new departure, and it is hoped to repeat it at a later date. Information as to future courses may be obtained from the Hon. Secretary, Central Association for Mental Welfare, 24, Buckingham Palace-road, S.W.1.

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[1] The rate is reckoned by counting the pulse for the first quarter minute after exercise and multiplying the result by four.

Special Articles.

THE LEAGUE OF NATIONS:

FIRST SESSION OF THE PERMANENT HEALTH COMMITTEE.

THE League Health Committee met in Geneva from Feb. 11th to the 21st. This was the first meeting of the Health Committee of the permanent Health Organisation that was formed at the end of last year. At this meeting rules of procedure were adopted, providing for regular sessions twice a year, for the formation of temporary or standing subcommittees, and for the use of the services of experts in connexion with a meeting of any of these committees or of the Health Committee itself. Thus the organisation is rendered elastic and every opportunity afforded for establishing contact with national health administrations or private organisations working on the same subjects.

Dr. Th. Madsen, head of the Copenhagen Serum Institute, and formerly chairman of the Provisional Health Committee, was elected chairman of the Permanent Committee. The President of the Advisory Council, who is ex-officio a member of the Health Committee, was also, it was decided, to be ex-officio Vice-President of the Health Committee, in order to ensure close contact between the Office International d'Hygiène Publique and the Committee. Dr. Velghe, head of the Belgian Health Service, at present holds this office. In view of the increase of work and responsibility connected with the Health Organisation, it was decided to have two further Vice-Presidencies, to be held for one year without re-election, thereby ensuring rotation among the members of the Committee. Sir George Buchanan, who was Vice-President of the Provisional Health Committee, was elected, as was Surgeon-General H. S. Cumming, chief of the United States Public Health Service. The Committee also nominated three out of the four assessors which it is, by its constitution, allowed to select. The final appointment rests with the League Council. The three assessors chosen are Dr. Chodzko, former Minister of Health of Poland; Dr. Bernnard Nocht, Director of the Hamburg Institute of Tropical Diseases; and Dr. Alice Hamilton, of Harvard University Medical School.

The members of the Health Committee are at present:—

France.—Prof. Léon Bernard, Chair of Medicine, University of Paris; Dr. L. Raynaud, Inspector-General of the Algerian Health Service.

Great Britain.—Sir George Buchanan, C.B., M.D., Senior Medical Officer, British Ministry of Health.

Switzerland.—Dr. H. Carrière, Director of the Federal Health Service.

Brazil.—Dr. Carlos Chagas, Director of the Oswaldo Cruz Institute.

Poland.—Dr. Chodzko.

United States.—Surg.-General H. S. Cumming, Chief of the Public Health Service; Dr. Alice Hamilton, Harvard University Medical School.

Egypt.—Dr. A. Granville Pasha, President of the Maritime Health Board.

Holland.—Dr. Jitta, President of the Board of Health.

Portugal.—Prof. Ricardo Jorge, Director-General of Public Health.

Japan.—Mr. Shiko Kusama, Japanese Office for the League of Nations (until appointment of Japanese member).

Italy.—Dr. A. Lutrario, Director-General of the Health Administration; Prof. Ottolenghi, Siena University.

Denmark.—Prof. Th. Madsen, Director of the State Serum Institute.

Peru.—Dr. P. Mimbela, Chair of Medicine.

Germany.—Prof. B. Nocht, Director of the Hamburg Institute of Tropical Medicine.

Spain.—Prof. Gustave Pittaluga, Chair of Medicine, Madrid.

Belgium.—Mr. O. Velghe, Director-General of the Health Service.

The Work of the Committee.

From the point of view of work this session was the seventh meeting of the League Health Committee and continued the work already undertaken by the Provisional Committee. One of the most important subjects, and a fundamental task of the Health Organisation as a whole, is the development of the service of epidemiological intelligence and public health statistics.

Epidemiological Intelligence.—Thanks to the financial aid of the Rockefeller Foundation, it has been possible greatly to extend this work, so as to make it embrace most of the countries of the world. Plans are being laid to "speed up" the receipt of information from the various national health administrations, by the substitution of cable despatches for notification by post. In other ways the service is being organised so as to make it fulfil its grand purpose—maximum usefulness to the national health administrations.

Interchanges of Public Health Personnel.—The system of bringing together picked men from the different health administrations and enabling them to study the sanitary organisation of one or two countries or, in the case of specialists, of the way a certain disease is dealt with in several countries, was reviewed at the present session and plans laid for the year 1924. The system of interchanges has now been in existence some 15 months and is beginning to assume permanent and organised lines. For one thing, it has now been possible to prepare the time-table and details well in advance and to issue the programme of the interchanges for 1924 in the form of a printed handbook. The national health administrations in whose countries the interchanges are taking place are now also profiting by the experience gained in the past to perfect the arrangement of the interchanges, and several have begun in this connexion to issue handbooks on various aspects of their national health service, as well as short, general accounts of the health legislation and administration of their countries. Moreover, candidates are now selected well in advance and taken so far as possible from "strategic" posts in their respective health administrations, thereby making certain that the maximum benefits will accrue from the experience gained in interchanges, and that the candidate will be prepared for the work he is to do.

The Far Eastern Report.—The Health Committee, in order to extend its service of epidemiological intelligence to the Far East, as proposed in the report of the Mission sent to the Far East in November, 1922, has recommended to the League Council that an epidemiological intelligence office should be set up at some convenient port in the Far East, for the purpose of collecting and communicating periodically information as to the incidence and development of infectious diseases, particularly in ports and their vicinity. The report embodying the findings of the Mission to the Far East, and particularly the recommendation as to a sanitary convention between Far Eastern States, will be communicated to the Governments concerned for their observations. The replies of the Governments will subsequently be studied by a special subcommittee.

The Epidemic Commission.

The Health Committee took note of the fact that the special emergency work of the Epidemic Commission in Poland and Greece was now concluded, and that the activities of the Commission were being turned more and more into the channels of inquiry and investigation which are part of the normal rôle of the Health Organisation. Thus, while the budget of the Commission for its special work in Poland and Greece was made up from voluntary contributions, the last assembly voted a sum of Fr.50,000 on the regular budget of the Health Organisation to permit of the Epidemic Commission continuing its inquiries and epidemiological research work. It was decided that part of these funds should be used by the Commission for collaborating with the Russian health authorities in their epidemiological researches concerning the typhus epidemic that devastated Russia immediately after the war, as well as their inquiries into cholera. The Commission will also take part in investigating the epidemics of plague that have been reported from the Kirghiz Republic and Kalmuk Territory in Russia.

The Health Committee further expressed its satisfaction at the resolution of the fourth assembly, which, taking note of the fact that the Epidemic Commission's work during times of acute distress was likely to be arrested for lack of funds if the Commission were solely dependent upon voluntary contributions, recommended that the Council should in case of need study what resources could be placed at the disposal of the League Health Organisation to enable it "to intervene immediately through the intermediary of its Epidemic Commissioners in the event of sudden epidemic outbreaks of exceptional importance which might involve political consequences." This resolution was taken as satisfying to a large extent a request of the provisional Health Committee that a small fund should be kept by the League at the disposal of the Epidemic Commission for emergency work in preventing the spread of epidemic diseases where such measures were suddenly and urgently called for in the interests of the public health of the world.

Combating Malaria.

The Committee adopted the report of the subcommittee appointed last June to suggest methods of coördinating the campaign against malaria being conducted by a number of European States as a result of the aggravation of this disease in the years succeeding the war. A questionnaire drawn up in conjunction with malaria experts in the various countries is to be sent to the health administrations of European countries affected by malaria and the replies studied by a subcommittee composed of some members of the Health Committee and malaria experts coöpted from outside. In the light of the information received and other studies undertaken by the Health Committee a general report on malaria in the countries affected will be drawn up, and a programme of prophylactic measures outlined. The Health Committee will thus be in a position to furnish advice to Governments which consult it on the subject. Such advice has already been requested by the Albanian, Greek, and Persian Governments. One of the Epidemic Commissioners has already presented a preliminary report based on an investigation of conditions in Albania, and the Health Committee has now authorised a further and more extended investigation in both Albania and Greece, to enable it to furnish the Albanian and Greek Governments with the technical advice for which they ask.

The Persian Government's request, with which it is also hoped to comply, is more general and involves a sanitary survey of the country as a whole where, it is stated, a health service hardly exists and diseases of all kinds, particularly malaria and syphilis, but also cholera, influenza, bubonic and pneumonic plague, typhus and relapsing fever, small-pox, intestinal disease, trachoma, and typhoid are widespread. Cattle disease, notably anthrax, is also said to be very prevalent and the whole situation characterised as appalling. Health conditions in Persia are important to surrounding countries, such as Turkey, Mesopotamia, Russia, and India, and particularly so in view of the Moslem pilgrim routes from the Far East to Mecca.

Quinine Supplies.—A further aspect of the problem of malaria now taken up by the Health Section is the question of quinine supplies. At present the total quantity of quinine produced in the world is 600,000 kg. per annum, made in 14 factories. It is doubtful whether this quantity is sufficient for the world's needs in view of the grave increase of malaria since the war. Consequently, it is suggested that if inquiries and investigations by the League Health Organisation appeared to warrant such a course, a conference should be held of representatives of the health departments of countries in which malaria is an important and urgent problem, to consider the possibility of increasing the supply, and cognate questions.

Cancer Investigation.

The Health Committee decided to continue the work of the subcommittee for investigating the pronounced differences in certain forms of cancer mortality revealed by the vital statistics for England and Wales, Holland and Italy. This inquiry, which is being conducted in connexion with the big national inquiries, started in various countries, such as England and Italy, will, it is hoped, reveal to what extent the observed increase in cancer is real and how far due to better diagnosis, completer records, &c., as well as make possible comparisons between the statistics of different countries, and so widen the area available for the investigation of such matters in the future.

Anthrax.

A mixed subcommittee of the Consultative Commission of Industrial Hygiene of the International Labour Organisation and of the Health Committee will be formed to investigate the efficacy of procedures of disinfection.

Opium.

The Committee decided, on the basis of the report of its subcommittee, that 450 mg. per head per year might be considered a provisional maximum amount of raw opium (containing on an average 10 per cent. of morphine) for the medical and scientific needs of countries possessing a well-developed medical service. In any case, this figure, given at the request of the League Opium Committee, was considered to be only a rough guide for estimating what fraction of the present world production of opium could be considered necessary for medical and scientific purposes.

Standardisation of Sera and Biological Products.

The Committee noted that the system of checking the various national units of antidiphtheria serum by the international unit, of which supplies are kept at the Copenhagen Institute, was working well, and that this institute had already tested the American, British, and German units and found them identical. Final agreement concerning a unit for tetanus antitoxin is now in sight, and the unit proposed is half the existing American unit. Investigations of dysentery, pneumococcus, and other sera are still proceeding. It was decided to add the investigation of anthrax and Malta fever sera to the work already undertaken.

During the year 1923 very active research was carried on into the sero-diagnosis of syphilis, culminating in a conference at Copenhagen, where the directors of several institutes, accompanied by their technical assistants, engaged in joint laboratory work for the purpose of comparing and coördinating their methods and tests. In connexion with this work the Committee passed a resolution pointing out that, in view of the great social gravity of the disease, blood tests for syphilis should be carried out only by highly experienced workers in specially organised laboratories —that is, in conditions permitting careful checking of the results obtained and minimising the possibility of error. For the same purpose laboratories engaged in this work should keep in close touch with hospitals for venereal disease, so that laboratory tests could be checked by clinical symptoms. Finally, the Committee's resolution insists upon the importance of concentrating these tests in laboratories where they are made free of charge and that afford every technical guarantee to the health administration of the State concerned.

As regards biological products, the Committee noted that the work of standardising internationally the therapeutic value of this class of drugs was being developed methodically, and that particular attention was being paid to the question of how insulin is being put on the market in various countries.

THE ASSOCIATION OF SCANDINAVIAN SURGEONS.

IN the summer of 1893 the first meeting of the Association of Scandinavian Surgeons was held in Gothenburg, and since then the membership of this Association has grown to between 300 and 400, including practically all the most distinguished Scandinavian surgeons. The fourteenth meeting of this Association was held in Stockholm last summer, and its "Forhandlinger," or transactions, have been published this year by the Association's secretary, Prof. P. Bull, of Christiania. The meeting was held under the presidency of Prof. H. Forssner, of Stockholm; and Prof. T. Rovsing, of Copenhagen, was elected as his successor. The next meeting of the Association will be in 1925 in Copenhagen. The following three main subjects have already been chosen for discussion in 1925: (1) The treatment of acute osteomyelitis and its sequels, (2) the treatment of non-tuberculous diseases of the uterine appendages, and (3) tuberculosis of the kidneys and urinary tract. In connexion with the last-named subject, the Association has organised an inquiry among Scandinavian practitioners as to their experiences of urinogenital tuberculosis, and the information thus obtained will be discussed in 1925. Thanks to their polylingual accomplishments, Scandinavian surgeons derive their inspirations from many sources, and it would be as correct to call their surgery cosmopolitan as Scandinavian. But a perusal of the "Forhandlinger," which runs into several hundred pages, reveals so much evidence of independent research and progress on the part of Scandinavian surgeons that it would be obviously unfair to regard their work as being chiefly inspired from without. The three chief subjects discussed in 1923 were: (1) The treatment of fractures of the neck of the femur, (2) the place of Cæsarean section in obstetrics, and (3) the treatment of empyema.

Treatment of Fractures of the Neck of the Femur.

The two opening papers on this subject were read by Prof. R. Faltin, of Helsingfors, and Dr. U. Lindgren, of Upsala. The former dealt chiefly with the literature and the theoretical side of the subject, while the latter devoted himself mainly to the end-results obtained at his hospital. Prof. Faltin's paper was a scathing criticism of the attitude hitherto commonly adopted towards this group of fractures which have not been classified, but have been, in his view, lumped into one lot over which ignorant pessimism has brooded. Prof. Faltin's first step has been to draw up an elaborate scheme of classification based on Kocher's old clinical classification and supplemented by the modern evidence of the skiagram. The only good thing to be said of the attitude of the past generation of surgeons towards the treatment of this group of fractures is that few of them were pleased with it. It is at present difficult to ascertain where they went astray because their statistics do not, as a rule, discriminate between the various kinds of fracture of the neck of the femur. Though the treatment that is suitable for one kind may be quite unsuitable for another, Prof. Faltin urges as a general rule that the first aim should be the restoration of function, and this is generally best attempted by at once setting the fracture, the broken parts being restored as closely as possible to the normal position. This generalisation might seem a truism, but as late as 1921 the American, Whitman, wrote: "The ideal object of treatment, restoration of form and function, is rarely to be attempted or even sought. The first indication is to save life, the second to get union, the third to correct or diminish displacement." With regard to impacted fractures, whether they be lateral or median, Prof. Faltin is in favour of readjustment instead of leaving the impaction alone in the hope that it will form the starting point of satisfactory bony union. It is unwise to assume that an impaction is firm or, indeed, that it exists, for the X rays may suggest impaction, although the broken fragments are only lightly hooked in each other. As for the best form of immobilisation, there is much to be said in favour of Whitman's immobilisation in plaster with the limb fixed in the position of maximum abduction and inward rotation in certain kinds of fracture, the capsule of the joint being employed in this position to immobilise the fracture. This treatment is particularly suitable for young persons with median fractures. Prof. Faltin has little good to say of treatment with splints and bandages or early ambulant treatment based on the assumption that there is little to be gained by prolonged immobilisation.

Dr. Lindgren's paper showed that, according to earlier publications, the mortality from this group of fractures, subjected to different kinds of treatment, ranged from 7 to 31 per cent., the "good" results ranging from 9 to 89 per cent., a width of range suggesting that the word "good" was not used with a uniform meaning. Dr. Lindgren's own material consisted of 95 cases, 21 of which terminated fatally. Of the surviving 74 patients, practically all were re-examined, and as a result of this re-examination Dr. Lindgren comes to the conclusion that, provided the patient is not too old and infirm, active, but not operative, treatment should at once be instituted, the displacement of a median fracture being exactly corrected, and the limb being put up in plaster in a position of inward rotation and great abduction. In the case of lateral fractures, immobilisation may be effected by traction and extension instead of by plaster. In either case no weight should be put on the limb before six months.

In the discussion which followed, Dr. O. Löfberg, of Malmö, gave an account of 306 cases, in 212 of which correction of displacements had been followed by immobilisation in plaster, the limb being abducted and inwardly rotated. Of these 212 patients, 199 were discharged from hospital, and 188 were subsequently re-examined. In 83, or 67 per cent., there was osseous union, and the patients were able to walk perfectly or comparatively well.

Prof. J. Nicolaysen, of Christiania, traced the changes of fashion in the treatment of these fractures of late years, and he observed that the fashion of extension, which enjoyed its greatest vogue about 1900, had given poor results, as far as the median fractures were concerned. For the past 12 years he has adopted Whitman's treatment by immobilisation in plaster, but his results have not been good.

Dr. E. Perman, of Stockholm, illustrated the problem from the insurance and workers' compensation point of view. His material consisted of 111 cases investigated under the Swedish insurance scheme in the period 1918–1920. As many as 36 of the patients suffered no permanent invalidism, and only 51 were definitely incapacitated to a greater or less extent. In the remaining 24 cases the incident, from the insurance point of view, was not yet closed.

Several other speakers published statistics and related their experiences of this group of fractures, and it was evidently the general opinion of the meeting that the passive pessimism shown in the treatment of these cases in the past should be vigorously revised in favour of accurate diagnosis and classification, immediate correction of deformities provided the patient's vitality can stand the strain, immobilisation in plaster, and maintenance of this immobilisation for a very long time. This last point raised the question of hospital accommodation, while one speaker pointed out that the climate of the Scandinavian countries provides outbreaks of these fractures in epidemic dimensions.

Treatment of Empyema.

The opening papers on this subject were by Dr. P. N. Hansen, of Copenhagen, and Dr. Einar Key, of Stockholm. Many of the papers on the same subject read by other surgeons dealt with empyema statistics running into three figures, and the debate centred more and more on the comparative merits of the open and closed methods of treatment. Little was said of the closed method by suction in the first two papers, but in the discussion that followed Prof. T. Rovsing recalled the meeting of the Association in 1913, when he and Dr. Ove Wulff gave statistical evidence of the superiority of the closed over the open method, the death-rate being reduced from 24 to 14 per cent., the incidence of chronic empyema from 40 to 7 per cent., and the duration of treatment much reduced. The speakers who followed concurred on the whole with Prof. Rovsing, and even those who had found little difference in the mortality were inclined to prefer the closed method with suction through a Pezzer's catheter because of its comparative cleanliness, economy in dressings, and absence of that general discomfort entailed by the open method.

The Place of Cæsarean Section in Obstetrics.

The opening paper by Prof. K. Brandt, of Christiania, dealt with 50 Cæsarean sections performed between 1919 and 1922. In 16 cases the indication was a narrow pelvis, in 11 it was placenta prævia, in 6 it was premature detachment of a normally situated placenta, and in 5 it was eclampsia. In the remaining 12 cases a miscellaneous collection of indications existed. With regard to placenta prævia as an indication, he raised an ethical point which is of special interest to teachers. Being attached to a teaching hospital in which both midwives and medical students are trained, Prof. Brandt felt it incumbent on himself often to practise and teach those procedures which, though perhaps only second-best in a hospital, ought to be adopted by midwives and doctors in general practice. Under such extra-hospital conditions, it is obvious that Cæsarean section is seldom feasible. So at his hospital Prof. Brandt has practised and taught Braxton Hicks's version as the best treatment for most cases of placenta prævia. But the results obtained with Cæsarean section in 11 cases of placenta prævia were so good (no maternal and only one fœtal death) that he admitted the superiority of this procedure under suitable conditions over all others. His own views, and those of speakers who followed, left little doubt that, with only a few exceptions, Cæsarean section has gained much ground in the Scandinavian countries during the last few years.

Other Obstetrical Papers.

In addition to the full-dress discussion on Cæsarean section, papers were read on several other obstetrical subjects. Prof. Brandt pleaded for the identification of senile pyometra with cancer of the uterus, and for the routine early removal of the uterus on this indication without the wasting of time entailed by curetting and cauterising. In the past he had often committed this error, finding out too late that an overlooked malignant growth had extended rapidly after his palliative tinkering. In another paper he ridiculed, with the support of statistics, the tendency of German obstetricians to regard 2000 g. as the weight level below which new-born infants cannot be considered viable. Of 348 living infants weighing 2000 g. or less at birth, he had found that 117, or 33·6 per cent., had died within 14 days, but the remainder had been discharged from hospital in perfect health and with every prospect of growing up. A statistical paper by Dr. O. A. Boije, of Helsingfors, was a defence of plugging the uterus for post-partum hæmorrhage and a refutation of the teaching that a tampon in the uterus promotes infection. In 114 out of 11,442 confinements he had plugged the uterus for post-partum hæmorrhage, and none of these cases had terminated fatally. The fact that they showed a comparatively high puerperal morbidity (13·1 per cent. as compared with 5·3 per cent. for all the confinements) might well be traced to other factors than the plugging—i.e., to the atony of the uterus, which in itself favours retention and sepsis, and to the frequent use of forceps, which had been applied in 27·2 per cent. of the cases treated by plugging. A paper by Dr. B. Lundqvist, of Stockholm, dealt with the conduct of labour delayed by primary uterine inertia. The chief lesson of his statistics was that, when the membranes have ruptured, the sooner labour is hastened artificially by forceps the better, provided dilatation has proceeded far enough for this purpose.

Other Surgical Papers.

The following list will give some idea of the wide range of the subjects discussed: Sauerbruch's artificial hand, the treatment of Pott's disease and of congenital dislocation of the hip in adults, bone transplantation, lymphogenic, metastatic osteitis, the treatment of osteomyelitis, the pathogenesis of torticollis, Lane's osteosynthesis, Kielland's obstetric forceps, the genesis of tar cysts of the ovaries, supernumerary breasts, idiopathic dilatation of the œsophagus, the pathology of anal fistula, sarcoma of the stomach, the surgical treatment of trigeminal neuralgia, the diagnostic value of Wohlgemut's diastase reaction in acute diseases of the pancreas, and the operative treatment of deformities of the lower jaw, the diagnosis of intestinal obstruction by gall-stones.

The list may be further extended by valuable discussions upon the stopping of brain cysts with fat grafts, periarterial sympathectomy, operations for free foreign bodies in the posterior portion of the knee-joint, laxatives and restrictions of diet before and after operations, traumatic chyloperitoneum, the mobilisation of joints, nitrogen retention and excretion in the subjects of hypertrophy of the prostate, and torsion of the testicle. We have also such questions considered as the reason why torn and crushed nerves heal less satisfactorily than clean-cut nerves, the topical diagnosis by exclusively clinical methods of chronic ulceration of the stomach and duodenum, the value of basal metabolism investigations in Graves's disease, the clinical diagnosis of this disease, the prophylaxis of post-operative retention of urine, the value of total resection of the bladder for carcinoma and of the spleen for pernicious anæmia, and the early diagnosis of embolism of the renal arteries.

The papers and the discussions thereon are published in one or other of the Scandinavian languages, and for surgeons unfamiliar with these languages, but conversant with French and German, as well as English, much of the information in these "Forhandlinger" will be available when some of their contents are again published in one or other of the Scandinavian *Acta*.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Dick Test.

LAST year Drs. George F. and Gladys H. Dick reported the successful inoculation of scarlet fever into two out of ten volunteers.[1] The organism used on that occasion was a particular strain of streptococcus. Now using a filtrate of this same culture they claim to be able to determine susceptibility to scarlet fever in exactly the same way that the Schick test determines susceptibility to diphtheria. An intradermal injection of a suitable dilution of this filtrate was observed to yield the following results: In persons who gave no history of having had scarlet fever 41·6 per cent. were positive (i.e., susceptible); 65 convalescents from scarlet fever were either entirely negative or else very slightly positive. It was further discovered that the injection of serum from convalescent patients into normal individuals inhibited the reaction whether the serum was given previously or at the same time as the inoculation of the specific filtrate. In two instances in which it was possible to observe the test before and after an attack of scarlet fever it was found to give a positive reaction in the former and a negative reaction in the latter case. These observations are somewhat out of harmony with the research of other investigators that had tended to incriminate a filtrable virus, but the results obtained already are sufficiently important to call for a confirmation or contradiction by other immunologists.

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[1] Jour. Amer. Med. Assoc., 1923, lxxxi., 1166.

To Control the Sale of Biologic Products.

On Feb. 28th a Bill was introduced into Congress to amend the Act of 1902 "to regulate the sale of viruses, serums, toxins, and analogous products." The amendments are naturally in the sense of strengthening this Act, which was perhaps rather in need of more rigid enforcement. The Secretary of the Treasury is empowered to refuse a licence to manufacturers if in his judgment the public interest would thereby be enhanced. No packages may be sold unless either an official standard or test has been established, or else the words "No U.S. Standard of Potency" shall appear in plainly legible type on the outside label or wrapper. No product shall be licensed which bears a deceptive label. Whether or no all these conditions can be enforced it is not easy to judge, but it is satisfactory that attention should be drawn again to the importance of standardising sera and vaccines not only in the United States but throughout the world.

Explosion of Anæsthetics.

The adoption of ethylene gas as an anæsthetic was announced more than a year ago. Since that time its use has spread gradually to most parts of the United States. Last week there was reported from the Union Memorial Hospital at Baltimore an accident which draws attention to a possible danger in the use of this anæsthetic, at any rate when administered with nitrous oxide. In this case the ethylene had been superseded for some reason by laughing gas, though at the time of the explosion the latter was turned off. A carbuncle had been excised and the surgeon was cauterising the wound with a platinum cautery. The patient died an hour after the explosion, death being attributed to pulmonary hæmorrhage. The anæsthetist's face was slightly burned and his hair singed, but no one else in the room received any injury. There are obviously explosive possibilities in this mixture of gases which should lead to caution in their use.

A MODEL SCHEME FOR A DIPLOMA IN PSYCHOLOGICAL MEDICINE.

As long ago as 1910 the President of the Medico-Psychological Association of Great Britain and Ireland addressed a letter to all universities and other examining bodies, urging the necessity for facilities being provided for post-graduate teaching in psychological medicine at all medical schools, and for the granting of a special diploma to candidates after examination, as had already been done with such conspicuous success in public health and tropical medicine. Largely as the outcome of that letter, diplomas in psychological medicine, or psychiatry, have been created at many universities and colleges, and definite progress has been made in the better systematic and scientific training of medical officers serving in mental institutions and others engaged in psychological medicine. Much, however, remains to be done. Not until every centre of medical teaching has adequate facilities for tuition in psychological medicine in the shape of a department or clinic in psychiatry can the treatment of disorders and diseases of the mind rise to the level of that of physical disorders and diseases. The Council of the Association, having regard to recent developments of psychiatry and practical experiences already gained in this matter, has prepared, through its committee on Post-graduate Teaching and Diploma in Psychological Medicine, a revised scheme of post-graduate work and subjects, which it is considered would constitute a suitable course for a diploma in psychological medicine. Its provisions are as follows:

1. The candidate must be already a registered medical practitioner.

2. The candidate may present himself for examination on the subjects detailed under Part I. of the curriculum (see para. 4) immediately he has concluded the prescribed course of instruction or can produce such other evidence of diligent study of the subjects to be examined upon as may be demanded. Part I. must be passed save by special permission at least three months prior to entering for examination on Part II. of the curriculum.

3. The candidate may not present himself for examination on the subjects detailed under Part II. of the curriculum (see 4) until he has been a registered medical practitioner for not less than two years. He must, subsequently to qualification, have been in the practice of an approved mental hospital for not less than two years, or have attended for six months at a hospital, mental or general, for clinical instruction in psychological medicine, and subsequently have held a resident appointment at an approved mental institution or mental wards of a general hospital for not less than six months. In both cases he must produce a certificate from a recognised source that he can apply his theoretical knowledge and has practical acquaintance with, and is well and adequately versed in, the current clinical methods of examination and treatment of nervous and mental disorders. In the case of mental deficiency the certificate should include a practical knowledge of the various intelligence tests and other methods of ascertaining the degree of mental defect. He must also produce evidence of having attended, subsequently to qualification, courses of lectures and demonstrations, or such other evidence of diligent study of the subjects upon which he presents himself for Part II. of the examination, as may be demanded.

4. *Curriculum.*—Part I.: (*a*) Anatomy, histology, and physiology of the nervous system, including the autonomic system. Anatomy and physiology of the endocrine glands. Chemistry and cytology of the cerebro-spinal fluid. (*b*) Psychology, systematic and experimental. Part II.: (*a*) Morbid anatomy, histology, and pathology of the systems mentioned under Part I. (*a*). Post-mortem and laboratory technique. (*b*) Neurology and clinical neurology. (*c*) Psychiatry (including the psycho-neuroses), clinical psychiatry and the medico-legal relationships of mental disorders and mental deficiency. In addition, the candidate for Part II. will need to show special knowledge of any one subject, to be selected by him from the subjects comprising Part I. or Part II.; or may choose to be examined in any one of the following subjects: (*d*) Mental deficiency and the mental disorders of childhood and adolescence, and the duties of school medical officers in relation thereto. (*e*) Bacteriology as applied to mental and nervous disease. (*f*) Psycho-pathology and psychotherapy. (*g*) The principles of diet, vitamins, and basal metabolism, and their application. (*h*) Eugenics, and vital statistics. (*i*) Criminology and the jurisprudence of criminal responsibility.

5. The diploma, by request, may be endorsed that special knowledge has been shown in the subject selected.

6. It is suggested that any compulsory attendance at lectures and demonstrations and clinical courses should be limited to the subjects detailed for Part II., and that the course for Part I. or Part II. should not exceed eight weeks.

The Association is fully aware that any action taken will need to be in line with the established practices and traditions of particular universities or examining bodies, but suggests that such bodies may give careful consideration to this model scheme.

MUNICIPALISATION OF MILK-SUPPLY IN MANCHESTER.—The Manchester Labour Party has prepared a report on the municipalisation of the city's milk-supply, to be brought before a conference to be held this month. The facts and arguments in this report are largely taken from a review written in 1920 by the present Lord Mayor when acting as chairman of the public health committee. In view of the deplorable condition of Manchester milk, together with the disastrous results on the young life of the city, the suggestion is to take the whole sale and distribution of milk out of private hands and place them under the jurisdiction of the city council. Unified control with a monopoly of sale would, it is alleged, give powers of inspection from the farm to the consumer, eliminate overlapping, and reduce cost. Other points in the programme are:—(1) Adequate inspection of farms in the rural areas, with compulsory drainage of shippons. (2) Establishment of country depôts where the milk can be strained, cooled, and bottled. (3) Special railway facilities; fleet of transport motors. Use and extension of tramways. (4) Milk centres in the city, to which the milk shall be directly consigned, from which it will be delivered to the consumer by light handcarts with compartments to hold the bottles. (5) Shops for the serving of customers, to be used as depôts for the replenishment of the dandies. Dairy produce made from the surplus milk at the country depôts to be sold. (6) Existing dairymen to be compensated.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. E. Moxon-Browne has been appointed senior medical officer of the light cruiser *Concord*.

The following appointments have been notified: Surg. Capts.: H. C. Whiteside, to the *Ganges*, for R.N. Sick Quarters, Shotley; L. M. Morris, to the *Victory*, for Haslar Hospital; and T. Creaser, to the *President*, for hospital course. Surg. Lt.-Comdr. S. R. Johnston, to the *Britannia*, for sick quarters, R.N. Barracks, Dartmouth.

ARMY MEDICAL SERVICE.

ARMY RESERVE OF OFFICERS.

Capt. N. M. Goodman, late Reg. Army Res. of Officers, Worc. R., to be Capt.

MILITIA.

Capt. E. A. Wilson to be Maj.

TERRITORIAL ARMY.

Capt. J. R. Griffiths (late Cheshire R.), to be Lt., and relinquishes the rank of Capt.

Lt. F. W. Martin to be Capt.

Lt. A. T. Sloan resigns his commn. and is granted the rank of Capt.

Capt. W. T. Gardiner from Gen. List to be Capt.

Supernumerary for service with O.T.C.—Maj. A. M. H. Gray to be Lt.-Col.; Maj. F. A. E. Crew to be Lt.-Col; and Capt. (Local Maj.) C. F. Searle to be Maj.

INDIAN MEDICAL SERVICE.

Col. R. Heard, K.H.S., has been selected for the appointment of Surgeon-General in Bengal, in succession to Maj.-Gen. B. H. Deare, C.I.E., K.H.S.

Majs. W. F. Brayne, S. W. Jones, J. Anderson, and G. G. Hirst to be Lt.-Cols.

MENTIONED IN DESPATCHES.

A *London Gazette* notice, dated March 28th, states that the name of the undermentioned officer is to be added to those brought to notice for distinguished and gallant services and devotion to duty by Lieut.-Gen. Sir J. G. Maxwell, commanding the Forces in Egypt, in his despatch of March 16th, 1916—namely, Maj. G. Hall, R.A.M.C. (T.F.).

THE NAVY AND DENTAL HYGIENE.

Attention is called in recent Fleet Orders to the importance of dental fitness. Arrangements are already in existence for the treatment by civilian dental surgeons of naval personnel where no naval dental officer is available at Army and Air Force dental centres. Dental officers will, it is stated, supplement individual instruction by lectures to patients on Oral Hygiene

TERRITORIAL ARMY NURSING SERVICE.

Regulations were issued with the Army Orders for February in regard to the Territorial Army Nursing Service, of which Queen Alexandra is president. The Service consists of the Matron-in-Chief, 23 principal matrons (4 in London, 2 in Glasgow, and 1 in Aberdeen, Edinburgh, Newcastle, Leeds, Sheffield, Manchester, Liverpool, Lincoln, Leicester, Birmingham, Oxford, Cambridge, Cardiff, Bristol, Portsmouth, Plymouth, and Brighton respectively), matrons, assistant matrons, sisters, and staff nurses. A candidate must be between 23 and 35 years of age, must be single or a widow, of British parentage or a naturalised British subject, and must possess a certificate of not less than 3 years' training in a civil general hospital of not less than 100 beds or a Poor-law infirmary recognised by the Ministry of Health as a nurses' training school. Senior members will be liable to be called up periodically for training in a military hospital, when they will receive army pay and allowances. On mobilisation members of the service will receive pay, according to rank corresponding to that of the Q.A.I.M.N.S.

DEATHS IN THE SERVICES.

Sir Walter J. Buchanan, K.C.I.E., I.M.S. retd., who was Inspector-General of Prisons in the Bengal Presidency from 1902 until 1919, died on March 23rd at the age of 62. He graduated in Arts and Medicine at Trinity College, Dublin, in 1887 and entered the Indian Medical Service in the same year. He served in the Chin-Lushai Expeditions, 1889–90 (medal with clasp), and retired with the rank of Lt.-Col. He edited the *Indian Medical Gazette* at Calcutta from 1899 to 1919, and was the author of a manual of Jail Hygiene.

Correspondence.

"Audi alteram partem."

CLINICAL RESULTS IN DEEP X RAY THERAPY.

To the Editor of THE LANCET.

SIR,—A consideration of the discussion on this subject at the Royal Society of Medicine[1] might easily give rise to a pessimism not, I think, fully justified. Some of the speakers—and among them one who had formerly been most enthusiastic—were of opinion that the percentage of successes by modern methods was but little greater than that obtained some years ago. The term "modern methods" was intended to refer chiefly to the Erlangen technique. It is, however, only fair to point out that the chief claim from this clinic was made concerning only one special form of cancer—namely, carcinoma of the cervix uteri; and then only with regard to early cases such as are, in this country, invariably operated on. If the public in Great Britain came to believe that the high percentage of "five-year" cures thus claimed (75 per cent., I think) could be obtained by the application of their method to other forms of cancer not at an early stage, this was no fault of the Erlangen authorities. The admitted fact that the treatment caused very considerable general disturbance led me from the first to regard it as unsuitable, at least in the single dose form, for advanced cases, and still less applicable for use as an aid to surgery. With respect to the latter, Mr. Sampson Handley—who is certainly the last person who could be accused of bias against X rays—said he was not sure that "deep X ray therapy" (by which he meant the massive dose method) was the sort of help the surgeon would ask. This attitude is not to be wondered at. For the surgeon must oppose anything which reduces his patient's vitality. He may reasonably ask one or both of two things from the radiologist: (1) that an inoperable case should be rendered operable; (2) that something be done to reduce the likelihood of recurrence after operations. He also requires that these things be accomplished without in any way depressing the patient. If, on the contrary, the latter can be made more fit in the process he is duly grateful.

Now, as a matter of incontrovertible clinical expression, it is often possible to make an inoperable case operable by comparatively small doses of X rays given every other day for a few weeks. At the end of which time, if pain has been complained of, it is less; and the patient feels much fitter than when the treatment began. Often weight has increased. It is obvious that no one would make a statement such as this unless, as is the case with the present writer, he could, if required, produce surgical testimony to support it. We have, then, a technique which is beneficial to the general health and of proved efficiency as regards its effects on malignant growth. It would, therefore, appear rational to employ the same procedure as a prophylactic after operation. I have done so for 13 years with what I believe to be excellent results—although, of course, it is much more difficult to furnish proof of benefit under these circumstances.

So much for the use of X rays as adjuncts to surgery. When a case be wholly abandoned to the radiologist he may at times use more drastic measures. The chief thing which the Erlangen School has taught us in this country is that under certain circumstances it is desirable to concentrate X ray dosage into a few days rather than to spread it over weeks. To give a patient an 8 to 10 hour exposure in one day is not, in my opinion, at all desirable. I am glad to see that you, Sir, in your editorial comments, say that the divided dose is preferable owing to lessening of the strain on the patient.

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[1] THE LANCET, March 29th, p. 649.

In the case of people who live at a distance, it is often very convenient for them to get their treatment over in a few days. But there are disadvantages. If the result appears to the patient very good—as in breast and pelvic cases it often does—she may delay her return until a recurrence develops, perhaps a year later. The question arises whether we ought not to provide some intermediate treatment directed to the maintaining of the general resistance, and, incidentally, securing that the patient is kept under observation. Fresh air, suitable diet, and possibly synthetic sunlight, may prove as valuable here as in tubercle.

I am, Sir, yours faithfully,

Harley-street, W., March 30th. F. HERNAMAN-JOHNSON.

CERTIFICATES OF INSANITY.

To the Editor of THE LANCET.

SIR,—From Dr. Ian D. Suttie's letter published in your issue of March 29th it is evident that he has misconstrued my letter in your previous issue. I asked whether medical superintendents of mental hospitals generally did not treat medical certificates as "confidential documents," and whether the general practitioner who made these certificates did not expect them to be treated as such. In other words, are they not of the nature of confidential statements furnished by one doctor to another? Dr. Suttie has implied that I advocate this on the grounds of shielding the medical man from the resentment of patients whom they have certified, but Dr. Macnamara, on the other hand, who has dealt with this matter in his letter of the same issue, conveys my meaning entirely, which is far removed from what Dr. Suttie suggests.

It may be unknown to some that within seven days of the patient's admission to a mental hospital statements made in the certificate of admission are carefully gone into during the examination of the patient without unnecessarily informing the patient from what source they have been obtained, and I can see no reason why the "perfect frankness" which Dr. Suttie suggests is wanting cannot be exercised in this matter. During my 18 years experience I have failed to meet with that lack of confidence which Dr. Suttie states exists between asylum medical officers and their patients, and I am sure this is no more lacking in mental hospitals than general hospitals, where one constantly meets with "fault-finders" and the discontented.

Another disadvantage that Dr. Suttie claims mental hospital patients suffer from is "lack of insight." This being part and parcel of the patient's mental state leading up to his certification I fail to see what benefit it would be to the patient to see what has been written on these certificates.

I am, Sir, yours faithfully,

Devon Mental Hosp., Exeter, March 31st. RICHARD EAGER.

A CRITICAL EXAMINATION OF PSYCHO-ANALYSIS.

To the Editor of THE LANCET.

SIR,—Dr. A. Wohlgemuth's entry into the sphere of medicine does not bring with it an impression of knowledgeable information. The well-known method of abreaction or the reviving of memories of painful experiences was practically unknown in this country before the war. The therapeutic value has since been demonstrated by a large number of English observers—the names of William Brown, Culpin, Forsyth, Prideaux, Stanford Read, and the late Dr. W. H. Rivers occur to me—and Dr. Wohlgemuth's reference [1] to one twenty-year-old foreign authority for the other side, although "especially emphatic," is not convincing even if the counting of heads has value in deriding controversy. Some of the workers above-named are not psycho-analysts, but they provide a wealth of observation, showing the need for a theory to convey the working of mental processes apart from awareness. I am not assuming that Dr. Wohlgemuth could not have found English authorities to support his contention, for the method of revival met with extraordinary opposition. The loss of memory was denied by some, the possibility of revival was denied by others, and its therapeutic value was attributed to "suggestion." At first sight the reason for this opposition is not clear, but when it is realised that if observations are correct, Freud's theories—even if not fully confirmed by them—must be seriously considered, then the opposition becomes comprehensible. Freud is a heretic, and no observation must be admitted that might strengthen the heresy, even if those who made them are not Freudians. If Dr. Wohlgemuth seeks clinical evidence which cannot be classed as "assertion," I recommend him to read Culpin's "Psychoneuroses of Peace and War" (Camb. Univ. Press). This writer is rather chary of theory except so far as his own observations demand it. I am, Sir, yours faithfully,

Wimpole-street, W., March 28th. ROBERT M. RIGGALL.

DICHOTOMY.

To the Editor of THE LANCET.

SIR,—I was, to put it mildly, surprised to see a report in the public press of a meeting of a provincial medical society at which the above subject was discussed and a resolution condemning the practice passed. In your issue of March 29th an article deals with the legal aspect of the practice.

The inference the public would naturally draw from these article is that such a practice is prevalent in the profession. Nothing could be conceived more calculated to impair or destroy the confidence of the people in their medical attendants. In my 40 years' work in the profession I never had even dreamed of the possible prevalence of such a state of affairs.

I trust in a future issue of your invaluable paper you may be able to deal with the topic in such a way as may remove all apprehension as to the existence of "dichotomy," in the manner suggested in the reports I have mentioned, from the minds of the public and of Yours faithfully,

Blackpool, March 29th, 1924. LEONARD MOLLOY.

*** No suggestion was made that the practice occurred with any frequency in this country. But the difficulty has been notorious elsewhere, as our special correspondents have pointed out.—ED. L.

DOMINIONS MEDICAL HOSPITALITY COMMITTEE.

To the Editor of THE LANCET.

SIR,—We have been instructed to ask members of the medical profession to assist this committee by offers of personal help. The circumstances of the formation and constitution of the committee have been fully explained in *The Lancet* and in the *British Medical Journal*.[1] The committee includes the President of the Royal College of Physicians, the Vice-President of the Royal College of Surgeons and Vice-Chancellor of London University, the Master of the Society of Apothecaries, the Presidents of all the Medical Societies of London, representatives of the Naval, Military, and Royal Air Forces, and of all the Dominions and Colonies. If any members of the medical profession in or near London are prepared to offer personal hospitality, we should be much obliged if they would inform us. Suggestions will be welcome. We are instructed to say that the committee would be grateful for any kind of hospitality, whether it take the form of accommodation for a short period, or of receptions, dinner parties, and the like.

The hon. secretaries will be glad to coöperate with the hosts in any way that may be of use, and will give any particulars possible. Offers should be addressed to the hon. secretaries, 94, Harley-street, W. 1.

We are, Sir, yours faithfully,

A. E. MORTIMER WOOLF, }
E. T. C. MILLIGAN, } Hon. Secretaries.

March 31st, 1924.

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[1] THE LANCET, March 29th, 1924, p. 675.

[1] The Lancet, March 1st, p. 453, and March 8th, p. 509; and Brit. Med. Jour., March 1st, p. 411, and March 8th, p. 437.

THE TESTIMONIAL TO DR. BRACKENBURY.

To the Editor of The Lancet.

Sir,—The long and untiring devotion of Dr. H. B. Brackenbury to the interest of the medical profession, culminating in his recent presentation of the case for insurance practitioners before the Court of Inquiry, has given rise to a widespread feeling that the time is opportune for adequate acknowledgment of his unique services. In order to give material expression to this desire a Committee has been formed with the object of collecting a fund which will be applied in a manner to be decided at a later date, after consultation with Dr. Brackenbury.

Insurance practitioners, who more than all others are indebted to Dr. Brackenbury, will be approached through their panel committees, many of which have already taken the matter in hand and have promised contributions. The appeal, however, is a general one, and steps are being taken to bring the fund to the notice of various other professional organisations. No direct request will be made by this Committee to individuals, but the Committee will welcome contributions from any member of the profession who wishes to pay tribute to Dr. Brackenbury's immense labours.

All communications should be addressed to the honorary secretaries of the fund (of which the undersigned form the executive committee), and cheques should be made payable to the honorary treasurer, Mr. H. S. Souttar, at Room 17, 429, Strand, W.C. 2.

We are, Sir, yours faithfully,

H. G. Dain,
Chairman.
N. Bishop Harman,
Deputy Chairman.
H. S. Souttar,
Hon. Treasurer.
T. Ridley Bailey.
R. J. Farman.
E. R. Fothergill.

C. E. Douglas,
Hon. Sec. and Treas. (Scotland).
W. E. Thomas,
Hon. Sec. and Treas. (Wales).
Harold S. Beadles,
Peter Macdonald,
Hon. Secretaries.

"BLIND CÆCOSTOMY."

To the Editor of The Lancet.

Sir,—In a kindly review of the second edition of my book on "Acute Abdominal Diseases," published in your issue of last week, there is almost a complaint that I do not advocate that operation for acute intestinal obstruction to which the name of "blind cæcostomy" has been applied. Now I am not quite sure who is responsible for this title, but it seems to me that surgical practice should not be governed by phrases. Whatever the value of catch-phrases may be in political issues, I think we ought to abjure them in scientific circles. Cæcostomy is certainly a good operation where cæcostomy is indicated, but why apply the adjective "blind"? Such a cæcostomy is an example of blind surgery. We all know what ought to happen if the blind lead the blind, but in this connexion it is the patient who falls into the ditch!

In how many cases of *acute* intestinal obstruction is it possible to know before operation that the obstruction is below the cæcum? In those where an obstructing mass can be palpated in the course of the colon, and this is usually prevented by the distention of the bowel. Secondly, in those cases where rectal examination reveals the cause of the obstruction, and I would submit that the only common indication for cæcostomy in acute obstruction is the discovery of a growth in the rectum. If this be so, it is a scientific procedure and does not merit the name "blind." I freely admit that lives have often been saved by an opening in the small intestine where the actual site of obstruction has not been determined and the surgeon contents himself with draining a distended piece of small bowel, but the same technique does not apply to the cæcum unless it is enormously distended. Furthermore, it must have been the experience of other surgeons besides myself that in a case of growth of the large intestine, as well as in diverticulitis of the pelvic colon, small and large bowel obstruction have been present at the same time, due to the small intestine being kinked, and adherent to the large. In such a case cæcostomy without exploration would indeed be "blind," and this adjective would soon be applicable also to the patient. Catch-phrases make bad surgery.

I am, Sir, yours faithfully,
Joseph E. Adams.
Harley-street, W., March 31st, 1924.

A CASE OF PRIMARY DISLOCATION DUE TO BOXING.

To the Editor of The Lancet.

Sir,—A patient recently reported sick, and was found to be suffering from a typical dislocation of the right shoulder. He stated that it took place whilst he was making a forward right stroke, boxing. He is a very muscular man, and the dislocation could not be reduced without an anæsthetic.

The points of interest are: (1) The uncommon cause of the dislocation; (2) the fact that the dislocation was a primary one. As the patient's shoulder-joint was not X rayed before the lesion was reduced, I am not certain whether it was of the subglenoid or the subcoracoid variety.

I would be interested to hear if any of your readers have met with a similar accident under similar circumstances.—I am, Sir, yours faithfully,

Brighton, March 26th, 1924. W. S. Crosthwait.

ITALIAN LABELS ON PROPRIETARY MEDICINES.

To the Editor of The Lancet.

Sir,—Our attention has been directed to your issue dated Feb. 2nd, on p. 256 of which, under the heading Secret Remedies, Formulas Disclosed by the Makers, you include what purports to be the formula of Guy's tonic. In the introductory paragraph it is suggested that this formula has appeared upon bottles of Guy's tonic sold in Italy, and that although the formula may not be the right one, the composition as stated is that disclosed by the makers themselves.

We desire to advise you that the exact composition of Guy's tonic has not been disclosed by ourselves to anybody, nor have we directly exported goods to the country mentioned. We understand that it is the custom of some distributing firms who import proprietary medicines into Italy to evolve a formula for the sole purpose of getting the goods through the customs. Consequently, these formulas may often bear very little relation to the actual ingredients. If this has been done in respect of Guy's tonic, you will agree that, as proprietors, we are not responsible, and in so far as your paragraph suggests that the formula you publish is that given by ourselves, or even authorised by us, it is contrary to fact and does not confirm or otherwise the alleged composition of Guy's tonic as published in Secret Remedies.

We are, Sir, yours faithfully,
March 20th, 1924. Guy's Tonic, Limited.

Presentation to Dr. F. W. Collinson.—Following a dinner at the Bull and Royal Hotel, Preston, on March 25th, Dr. F. W. Collinson was presented with his portrait in oils, painted by Mr. W. W. Russell, A.R.A., and an illuminated address on behalf of 80 medical men of Preston and district. The address, beautifully bound in dark-blue morocco, was inscribed on vellum, with a replica of the portrait on the title page. Below the portrait was the following inscription:—Frederick William Collinson, M.D. Edin., M.R.C.P. Lond., F.R.C.S. Edin., senior house surgeon 1887–1889; honorary surgeon 1889–1923; hon. consulting surgeon, 1923; hon. secretary medical board 1901–1924; hon. librarian Brackenbury Library, 1894–1924; vice-president Preston Royal Infirmary, 1923. The presentation marked the retirement of Dr. Collinson as senior surgeon from the medical staff of the Preston Royal Infirmary.

Obituary.

HETTY ETHELBERTA CLAREMONT, M.S. LOND., F.R.C.S. ENG.

WE deeply regret to record the death on March 27th of Miss Ethelberta Claremont, from broncho-pneumonia complicating typhoid fever. Born in 1892, she was the daughter of Mr. A. W. Claremont, J.P., and granddaughter of Claude Clarke Claremont, M.R.C.S. Eng., sometime public vaccinator for St. Pancras; and she belonged to a family that has given a number of medical men to the profession. Educated privately and at King Alfred School under Mr. John Russell, Miss Claremont began her medical studies at the London (R.F.H.) School of Medicine for Women and proceeded later to St. George's Hospital, where she was awarded the John Hunter gold medal. After a brilliant career as a student she took the Conjoint Diploma of the Royal Colleges in 1916, and the M.B., B.S. Lond. in the following year. At St. George's Hospital she held numerous appointments, including those of house surgeon, house physician, surgical registrar, resident anæsthetist, assistant curator of the museum, casualty officer, and assistant in the V.D. department. In 1920 she became a Fellow of the Royal College of Surgeons and then spent a year as voluntary resident assistant surgeon at the Zurich University Clinic, also visiting clinics at Vienna, Budapesth, Frankfurt, and Madrid. On her return to England she became surgical registrar to the London Temperance Hospital and was appointed surgeon to the Bermondsey Medical Mission Hospital, and she held the post of clinical assistant at the out-patient department of the South London Hospital for Women, and for a time at the female Lock Hospital. In 1922 she became a Master of Surgery in the University of London.

ETHELBERTA CLAREMONT.

As a surgeon Miss Claremont showed outstanding abilities and perseverance. Her skill as a diagnostician was great, but even more remarkable was her discernment of human nature. She was deeply concerned with the welfare of her patients, in whom she took a lasting interest. At the time of her sudden illness she was developing some original research work which will now be lost to medicine. Miss Claremont had more than average linguistic ability. She was athletic, possessing an exceptional physique and some experience of mountain climbing. She could walk 20 miles in a day. Her hobbies included carpentry, gardening, and music. The freshness and charm which attracted people to her were the visible signs of an inward healthiness of body and mind.

To Miss Claremont's qualities of heart and head we have received a number of personal testimonies. Dr. Mary Scharlieb, after describing her record of professional work as one of which any young graduate might be justly proud, adds: "It shows how wide was her range of knowledge and how well she had succeeded in impressing her personality and her abilities on those who were best qualified to judge of them, her own immediate superiors and teachers. We all acknowledge the loss sustained by the medical profession in the premature and tragic death of this gifted and very charming young woman. I knew Dr. Ethelberta Claremont well from the time that she was a little girl, and always found her to be straightforward, honourable and unselfish."

Sir Humphry Rolleston writes: "The premature end of a promising career before there has been time to see its outcome is always distressing, and in the case of such a keen intellect and attractive personality as that of Miss Claremont is indeed deplorable. Coming to St. George's Hospital during the war, she held a number of resident appointments and then served as surgical registrar and assistant curator of the museum; I saw much of her work in the last post and came to respect her ideals and practical efficiency. With the highest surgical qualifications she had in her short professional life since then worked hard in several other hospitals, but the reward that honest devotion should have secured has been denied her and the profession has been robbed of a brilliant and promising member by the ruthless hand of death."

Miss Claremont had been recently a frequent and valued contributor to our editorial columns, and we join with her other friends and admirers in offering tribute of sympathy to her parents and family.

THE LATE SIR WILLIAM MACEWEN.

WE have received from a friend of the late Sir William Macewen, who also attended him in his last illness, the following appreciation:—

"On one of these recent days the writer stood, alone in the room, by the bedside of Sir William Macewen, when he lay, high on his pillows, enjoying a brief respite of peace and comfort from suffering. Quite suddenly and spontaneously, in his ordinary quiet and deliberate voice, he began to speak of Mr. Lister. That surgeon had brought into his class one day a book from which he read to his students extracts from a paper by Pasteur, in which the French chemist explained his view that putrefaction was due to the operation of living organisms. Mr. Lister had consulted an eminent chemist of the day as to chemical means by which such organisms might be destroyed on living tissues, and the answer he had received was that he could be supplied with a long list of such substances, but what their effect might be on the tissues it was for the surgeon to determine, but the chemist had added 'try carbolic acid.' These were days scarcely to be imagined or conceived by the surgical student of the present day, and death following amputation after amputation in melancholy and almost invariable sequence was disheartening to the last degree.

"William Macewen, a junior student of surgery in the Royal Infirmary at that time, was a witness to these events and a listener to these suggestions, and one morning, more than usually depressed by these events, he came out of the infirmary, and sat down on a bench to consider by himself whether he could continue to pursue a study which could show only such results, and whether he should not abandon the study of medicine. An elderly woman of the domestic staff passed him as he sat in gloomy contemplation, and, struck by his aspect, stopped in front of him and said, 'What's makin' ye sae sad the day, laddie?' To which he answered with a wave of the hand towards the hospital, 'Who could help being sad at these things.' To which the woman replied that it would be to more purpose to go back and try to mend them. The student went back, went back to a recent amputation, looked at the ligatures which projected in long ends from the wound. They looked dirty; he then had a look at the unused ligatures, which were made of hemp and kept in a jar, and they did not seem clean. He then asked and obtained permission to try if boiling would improve them, and from the ligatures he passed to the needles, and, without further request, passed to the instruments, with increasingly appreciable results; but he could not so secure the cleanness of the hands of the attendant who handled them all.

"The little monologue, of which the above is but the substance, was spoken in a clear quiet voice, without halt for fitting words, without delay of memory, as if the times, and occasions, and incidents stood out clearly in the speaker's mind as but things of yesterday, but the tale was unfolded with, for that speaker, a most unusual quiver of the mouth and moisture of the eyes. It was as if the speaker's mind travelled back down the long trail which he had followed, and saw, far down amid darkness and cloud of ignorance and noisome pestilence, the very spot and moment from which he had consciously and deliberately set forth on a determined road—the bitter, narrow path of commencement, full of hindrances and obstacles, the toilsome slow ascent, until at last he lay at rest upon the shining peak—content. There was no exultation in the quiet voice, no self-glorification in the calm narration, only a fullness of content at the assurance that the task he had, more than half a century before, set himself to do had been accomplished.

"This was the key to Sir William Macewen's character, the 'secret' of his life. He deliberately set before himself a definite purpose, not the quest of glory nor the amassing of riches, but the exposing of the causes of a type of disease that was a scourge to humanity and a scandal to surgery and their destruction. To this end everything was subordinated. For the causes were a mystery; they were as impalpable and invisible as they were malignant and apparently omnipresent. He began the task from the beginning; there was no science of bacteriology then, no charts of the region he set out to explore, no guide in the darkness he set out to illuminate. He had to devise his own methods, to forge his own instruments. He worked alone. He must have been gifted with remarkable powers of observation, a clear faculty of memory, and a firm will. But even gifts atrophy if unused, but his he developed to a high degree as implements for his purpose.

"Thus mere opinions and arguments founded on opinions left him cold. He wanted facts, and because a misinterpreted observation might easily lead widely astray, he wanted to observe the alleged fact for himself, and if it had any bearing on his pursuit to work out his own conclusions. Thus the very circumstances of the time and the nature of the pursuit led inevitably to a discarding of traditional views, to a mistrust of ordinarily accepted methods, and to a minute attention to detail in the devising of new ones. In his progress his mind advanced deliberately from one tested position to another; he refused to take mental leaps. As success attended his endeavour, and the prospect widened, the implications of his work went far beyond the goal for which at first he set out.

"The surgical student of to-day enters upon such a heritage of established fact, of clear principle, of proved method that it is scarcely possible for him to realise the ignorance and darkness out of which these have been evolved and the labour involved in the process. The search for the cause of surgical disaster, on the assumption that the cause is living, infinitely small and ubiquitous, inevitably laid under suspicion everything and every person in, on, and around, and the elimination of every possible source from which the cause could issue seemed almost an unattainable ideal, yet this was the ideal which the, as yet, unqualified junior student of surgery seemed already to conceive. But what a deep distrust of men and of things does this engender! What caution in the choice of human instruments no less than of material means! What testing of them all when chosen! If the full development and practically automatic observance of the aseptic technique have swept away these clouds of suspicion and mistrust with the ignorance and pestilence out of which they were begotten, they yet left their indelible stamp upon the man who, to accomplish their destruction, had submitted himself to their ordeal.

"Macewen's independence of judgment, keenness of observation, meticulous attention to detail, tenacity of purpose, caution in reaching conclusions, reliance on self were some of the weapons he took to himself for the warfare in which he engaged and to which he gave his life; they were the habiliments of his mind, the vestments of his spirit. Similar qualities characterised his friendship. He did not 'wear his heart on his sleeve for daws to peck at.' He was slow to give his friendship, for with it he gave his confidence, and here, too, mistrust had first to be dispelled, or, rather, fitness for trust had first to be established. His hospitality exhibited some of the same high quality. The discerning guest at his table could not fail to savour the harmony that pervaded the meal, and the fitness without ostentation of its service.

"Sir William Macewen would have made a poor politician; he would never compromise, though in less democratic days he might have made a rare statesman. In commerce he would have been a failure; he never bought in a cheap market, he gave always of his best, and often did not know whether he had received payment. Work was his religion; and the religion of his work was, 'Whatsoever thy hand findeth to do, do it with thy might.'"

SUSSEX PROVIDENT SCHEME.—This scheme for hospital benefits and additional medical services, to which persons are entitled by paying small sums in advance, made great strides during 1923. Fifty-six new groups were formed, and there was an increase in the number of subscribers to the extent of 2761, with a corresponding increase in the number of dependents of 4393, making in all a total increase of 7154 people entitled to the benefits. At the end of 1922 there were no groups outside Brighton and Hove, but at the end of 1923 there were 17; this number had been doubled since the advent of the current year, largely owing to the efforts of Major G. H. M. Fowler, who had been appointed by the Royal Sussex County Hospital as county appeal organiser and lecturer. The report presented at the annual meeting on March 19th showed that during 1923, 312 people received in-patient treatment for a period of 6520 days at a cost of £2786 3*s.* 11*d.*, and that 1037 people had made 5542 attendances for the various forms of specialised medical treatment at a cost of £448 15*s.* 6*d.*, making a total of £3234 19*s.* 5*d.* paid to the hospitals. The balance-sheet showed a small balance in hand proving, it was declared, that 12*s.* a year was the minimum subscription which could provide hospital treatment. Dr. Gordon Dill, the founder of the scheme, expressed the view that having successfully weathered three most expensive years, so far as hospital treatment was concerned, a larger balance would be shown at the end of the current year, by reason of the decrease in the hospital costs, notably in the case of the Royal Sussex County Hospital.

Medical News.

University of London.—At a meeting of the Senate held on March 26th, the Vice-Chancellor being in the chair, Mr. H. J. Waring was appointed to represent the University at the Imperial Social Hygiene Congress to be held at the British Empire Exhibition in May, 1924.

Lectures on Mental Deficiency.—A course of lectures on mental deficiency, supplemented by a course of clinical instruction, has been arranged by the University Extension Board in coöperation with the Central Association for Mental Welfare, to be held from May 19th to 24th. It is intended for qualified medical practitioners, and more especially for those who are engaged as certifying officers to local authorities under the Mental Deficiency Act, 1913, as school medical officers, or as medical officers of institutions, or who are otherwise definitely concerned with defectives. The course will be based on the requirements of the syllabus for the University of London diploma in Psychological Medicine. The University will grant a certificate of attendance to those who have attended the whole course regularly, taking both theoretical and practical work. Lectures will be delivered by Drs. A. F. Tredgold, F. C. Shrubsall, Cyril Burt, D.Sc., and Norwood East, and the clinical work will consist of visits to L.C.C. and other special schools for mental deficients. Registration fee, 10*s.* 6*d.*; fee for the course, £2 12*s.* 6*d.* All communications with reference to the course should be addressed to Miss Evelyn Fox, c/o University Extension Department, University of London, Imperial Institute-road, South Kensington, S.W. 7.

University of Manchester.—At recent examinations the following candidates were successful:—

Diploma in Public Health.

Beatrice L. Ellison, W. D. Hood, J. G. McKinlay, and Margaret Pownall.

Diploma in Psychological Medicine.

Part I.—L. C. F. Chevens, H. D. Cormac, T. W. Davidson W. J. Lynch, W. R. McGlashan, and C. B. V. Walker.

Queen's University of Belfast.—At examinations held recently the following degrees and diplomas were obtained:—

Doctor of Medicine (M.D.).

*John A. Smyth, †John H. Dunn, William E. Crawford, Eric A. Davison, John S. Dudgeon, and Samuel A. Powell.

Bachelor of Medicine, Bachelor of Surgery, and Bachelor of Obstetrics (M.B., B.Ch., B.A.O.).

First-class Honours.—Thomas J. Gibson.

Second-class Honours.—Wallace Linton and Matilda Matson.

Pass.—Isobel Alexander, Thomas V. Aronstam, James G. Bell, John E. Boyd, John L. Bradley, Margaret T. Clearkin, Thomas Craig, John S. Erwin, Elizabeth Fulton, John A. Gill, William D. Hamilton, William K. Hay, Elizabeth G. Henderson, James P. Henderson, David Kinley, Isabel Lindsay, Gerard B. McCloskey, Samuel McCormack, Helen F. McCrea, Violet McFeeter, William G. McKinney, Catherine McNeill, Jane A. D. Maclean, Edward Magee, John S. Malseed, Flora Richards, Gibson G. Smith, James Smith, John Stuart, Dorothy Watson, and Eleanor I. Wheeler.

Diploma in Public Health (D.P.H.).

Kenneth Cowan, George A. Dawson, Margaret R. Hanna, John J. Murray, John W. Orr, Mary E. Patterson, John Scott, and Jeanie Wilson.

Diploma in Dentistry (L.D.S.).

William A. McClelland.

* With Gold Medal. † With commendation.

University of Aberdeen.—At examinations held recently the following candidates satisfied the examiners:—

Degree of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.).

With First-class Honours.—*Andrew M. Duthie.

With Second-class Honours.—Arthur M. Barron, †Charles Burnett, †William Greenlaw, †William Gunn, David P. Levack, Thomas D. Marr, †Mary S. Sutherland, †Gavin C. Taylor, †Charles W. Walker, and †William W. Walker.

Ordinary Degree.—Alexander Aberdein, William Adams, John H. Bell, Jeannie Benzie, Frederick J. T. Bowie, John Boyd, James Carrie, Laura D. Catto, William G. Cheyne, George S. Christie, William S. G. Christie, Thomas Clunie, Henry Clyne, James Cooper, William S. Coutts, James W. Craig, Charles L. C. Crowe, James Davidson, Sydney G. Davidson, Alexander W. Dockar, James K. Donald, Alexander Donaldson, Arthur W. M. Douglas, John W. Duncan, John F. Durno, Effie M. Duthie, Walter L. Esson, Leonard H. Eunson, Donald Farquharson, Rhoda G. Findlay, Nelly Flett, Alexander M. Fraser, Robert G. Fraser, Eric G. A. W. Fulton, John A. Gaiter, Edwin Garden, Robert U. Gillan, Daniel G. J. Gordon, James Gordon, James Grant, John K. Grant, Alexander P. Gray, John S. Harper, James W. Hay, James Henderson, Allan C. Hendry, Edward Hutcheon, James Innes, William J. Jack, William J. Leach, Mary R. Levack, John M. MacFarquhar, William H. J. McGillivray, Alexander H. Mackay, George W. M. Mackay, Harry A. Mackay, George D. Mackenzie, James McKenzie, Neil O. Mackinnon, John W. McKinty, Leslie G. McLean, †Duncan McLellan, Donald McLennan, Angus Macphail, Redvers G. Melvin, Betty Mitchell, George R. Morgan, †Alexander M. Morrice, †Alexander G. Mowat, James J. Munro, James W. Murdoch, William Niven, James H. S. Peterkin, William R. Pratt, Alexander F. Pringle, Francois P. S. Retief, Alexander Roy, Christina Russell, Robert A. Simpson, David Skinner, Gordon J. Smith, Gladys A. Spark, Robert J. Stephen, James G. Stewart, William Sutherland, George Swapp, Margaret A. C. Symon, Robert M. Thompson, Alfred Torrie, William Tweddell, James A. Whyte, Charles D. Wilson, and Maxwell C. Wright.

Diploma in Public Health (D.P.H.).

Helena M. Davidson, Marjorie I. Outram, and Gladys N. Watson.

* Completed Final Medical Professional Examination with much distinction.

† Completed Final Medical Professional Examination with distinction.

School of Physic, Trinity College, Dublin.—At examinations held recently the following candidates were successful:—

Final Medical Examination.

Part I.

Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology.—C. R. Boland (high marks), N. Shapira (high marks), W. G. S. Maxwell, F. H. M'Kenna, H. Waters, E. S. A. Crawford, C. E. M'Causland, H. Tomkin, and M. Sherowitz.

Part II.

Medicine (M.B.).—L. E. J. Werner (high marks), R. Schaffer (high marks), C. J. M'Quillan, G. Robinson, W. R. Aykroyd, M. A. Gerrard, H. J. Hugo, M. D. Fox and Evaline E. Mooney (equal), W. J. Janse van Rensburg, L. C. Brough, R. R. D. Crawford, Lucy M. Joly, R. L. G. Proctor, W. A. Hopkins, K. F. Mackenzie, Eileen Brangan, Anne D. Dockrell, I. J. Isaacson, P. P. van der Merwe, S. Wigoder and G. A. Cowan (equal), W. A. Redmond, D. K. Lyons, E. C. Downer and J. J. Laing (equal), C. R. Hillis, Dorothy J. Booth, J. L. F. Steele and C. J. N. Loubser (equal), J. Morris, and A. L. Dobbyn and O. G. Wilde (equal).

Surgery (B.Ch.).—W. A. Taylor (high marks), L. E. J. Werner (high marks), F. C. B. L. B. Crawford, Lucy M. Joly, L. M. Bell, A. Hawthorne, Anne D. Dockrell, Norah M. Gilcriest, E. Harvey, R. E. Fausset and I. J. Isaacson (equal), Evaline E. Mooney, H. O'D. Burke-Gaffney and Bertha H. Lawler (equal), W. R. Aykroyd and C. J. N. Loubser (equal), R. Warnock, and S. W. Jamison.

Midwifery (B.A.O.).—T. W. May (high marks), D. L. Hemmingway (high marks), P. K. Dixon, M. Sless and W. D. Speedy (equal), Isidore Rosin, W. H. Coen, A. J. Mooney, J. Cussen, S. M'Dermott, S. E. Magowan and Isobel G. Smith (equal), F. M. Purcell, W. H. Maguire, J. Crawford, M. D. Fox, J. M. Johnston, J. L. Levingston, G. G. M'Farland, J. G. Maguire and A. B. Monks (equal), Agnes L. Kelly and C. Lord-Flood (equal), M. J. Bradlaw, C. R. Moore, A. J. Head, W. J. van Zijl, and C. Wilson.

Diploma in Public Health.

Part I.

Chemistry, Bacteriology, Physics, and Meteorology.—G. Bewley, N. M'I. Falkiner, B. W. D. Fayle, A. Darlington, A. E. Campbell, Ruth Lemon, G. Blackall, W. L. Duncan, R. H. Micks, R. S. M'Elroy, and Iris P. Nelis.

Part II.

Sanitary Engineering; Practical Sanitary Report; Hygiene and Epidemiology; Vital Statistics and Public Health Law.—A. Darlington, W. L. Duncan, and G. Backall.

Final Dental Examination (B.Dent.Sc.).

J. F. F. Liddy.

Dental Appointments in the Navy.—The following candidates were successful in the competitive examination recently held in London for appointment as dental officers in His Majesty's Royal Navy (their names have been placed in the order of merit shown at the examination):—

O. J. Barrable, L.D.S., Royal Dental Hosp., London; E. R. Longhurst, L.D.S., London Hosp. Dental School; H. N. V. Barnes, L.D.S., Univ. of Bristol Dental School; D. H. le Marchant, L.D.S., Univ. of Manchester Dental School; and D. L. Simpson, L.D.S., National Dental Hosp. of London.

Ministry of Health and the British Empire Exhibition.—The Ministry has prepared a number of exhibits which should prove extremely interesting and instructive to local authorities and their officers. These exhibits, consisting of photographs, plans, models, and the like, will be found in the Government Pavilion and in an annexe, and will be arranged under the following heads: Housing, Town Planning, Disease Prevention, Maternity and Child Welfare, Water Supply, Sewerage and Sewage Disposal, Public Cleansing, Smoke Prevention, and the Welfare of the Blind.

Royal College of Physicians of London.—An extraordinary Comitia of the College was held on March 26th, Sir Humphry Rolleston, the President, being in the chair. The President announced that he had appointed Dr. S. Monckton Copeman as delegate at the Congress to be held by the Royal Sanitary Institute in July next. Regarding certain proposals made to the College by Sir Howard Frank for the transfer of the present site of the College to the Canadian Government, it was resolved "that the College regrets that it is unable to accede to the proposals made by Sir Howard Frank." The question of sending a representative to the General Council of the Fellowship of Medicine was discussed, and on the recommendation of the Censors' Board it was resolved to ask Lord Dawson to act in this capacity.

Fellowship of Medicine and Post-Graduate Medical Association.—During the second week of the fortnight's intensive course at the London Temperance Hospital, which begins on Monday, April 7th, apart from the practical demonstrations, ward rounds, and out-patient clinics, there will be a daily lecture at 4.30 P.M., open to the medical profession. These lectures are: The Diagnosis of the Acute Abdomen, by Mr. V. Z. Cope; On Ophthalmology for General Practitioners, by Mr. Ernest Clarke; Varieties of Dyspepsia and their Differential Diagnosis, by Dr. Soltau Fenwick; Gastro-enterology, by Dr. David Somerville; and the Diagnosis and Treatment of Rectal Cancer, by Mr. W. E. Miles. As part of the course there will be a demonstration on fevers by Dr. Goodall, at the North-Western Fever Hospital, one on Mental Diseases, by Dr. Porter Phillips at the Bethlem Royal Hospital, and an ophthalmological demonstration at the Royal Westminster Ophthalmic Hospital. The fee for the week's course is £2 2*s*. During the week there will be continued the course in ophthalmology at the Royal Westminster Ophthalmic Hospital, consisting of clinical instruction every afternoon from 2 P.M., and special demonstrations in medical ophthalmology and methods of examination on Tuesdays and Thursdays. The following courses will be held in May: A two weeks' intensive course at the Prince of Wales's General Hospital, Tottenham, May 19th to 31st; special courses in diseases of children at the Infants Hospital, May 12th to 24th; diseases of the ear, nose, and throat at the Central London Throat, Nose, and Ear Hospital, May 12th to 30th; proctology at St. Mark's Hospital, May 5th to 17th; psychological medicine at Maudsley Hospital, May 5th to 30th; and venereal disease at the London Lock Hospital, May 5th to 31st. Copies of each syllabus, with full particulars of the above courses, can be obtained on application to the Secretary to the Fellowship of Medicine at No. 1, Wimpole-street, W. 1.

Royal Sanitary Institute.—A sessional meeting will be held on April 11th and 12th in the Council Chamber, town-hall, Newport (Mon.), Dr. Charles Porter presiding. On April 11th, at 2.30 P.M., visits will be paid to the X ray and out-patients' departments of the Royal Gwent Hospital and to the Newport Alexandra Docks. At 4 P.M., at the town-hall, an exhibition of work done by members of the local maternity and child welfare centres will be shown. At 5.15 P.M. discussions will be held on Some Aspects of Child Welfare Work, to be opened by Dr. Minna A. Benner, and on the Increase in the Use of Boric Acid in the Sophistication of Foods, to be opened by Dr. J. Howard Jones. Dr. Ralph M. F. Picken, Dr. J. S. Peebles, Dr. Herbert Jones, and Mr. George Hogan will take part. On April 12th, at 10.30 A.M., visits will be paid to the new works of the Whitehead Iron and Steel Co., Ltd., and to the Newport Gasworks, and special educational films will be shown. At 12 noon, at the town-hall, discussions will be held on Food Hygiene, opened by Mr. Spencer E. Jones, and on Pure Milk, opened by Mr. W. E. Thorn.

Congress of the Royal Sanitary Institute at Bordeaux.—The 1924 Congress of the Royal Sanitary Institute, to be held at Bordeaux under the patronage of the President of the French Republic and the presidency of Viscount Burnham, will be opened on June 4th. The sections of the Congress will be as follows: (1) State Medicine and Municipal Hygiene: Presidents, Sir Humphry Rolleston, Prof. C. Achard; hon. secretaries, Dr. W. Hanna, Dr. J. M. Clements, Dr. R. Pierret. (2) Naval, Military, and Air: Presidents, Surgeon Vice-Admiral Joseph Chambers, Médecin Inspecteur Général Vincent, Dr. Girard; hon. secretaries, Surg.-Comdr. S. Bradbury, Squadron-Leader J. H. Peek, Médecin Major J. Petit, Dr. G. Larrazet. (3) Industrial Hygiene: Presidents, Sir Thomas Oliver, Prof. W. Dubreuilh; hon. secretaries, Dr. G. Hurrell, Dr. C. S. Thompson, Mr. M. D. Wallace. (4) Tropical Diseases: Presidents, Sir Ronald Ross, Prof. A. Calmette; hon. secretaries, Dr. J. G. Thomson, Dr. D. Thomson, Dr. L. Dax. (5) Pathology, Bacteriology, and Biochemistry: Presidents, Sir John Bland-Sutton, Prof. G. Mouriquand; hon. secretaries, Dr. F. Goodwin Rawlinsons, Dr. Arthur Compton, Mr. R. Keith Cannan, Dr. Jeanneney. (6) Women and Public Health: Presidents, H.E. the Marchioness of Crewe, Lady Bland-Sutton (deputy), Mme. Wallerstein; hon. secretaries, Mrs. Alfred Webb-Johnson, Dr. Violet Kelynack, Mme. J. Forsans. The hon. secretaries of the Congress are Prof. E. W. Hope, Prof. R. Cruchet, Dr. T. N. Kelynack, and Mr. E. G. Faure. The central office for registration, information, &c., will be in the Faculty of Medicine of the University of Bordeaux, Place de la Victoire. The London offices of the Congress are at 37, Russell-square, W.C. 1. Specially reduced railway fares (return tickets) have been arranged for members attending the Congress by all routes to Paris and Bordeaux, available from May 31st on presentation of certificate from the Secretary. Membership fee, £1 1*s*.

Hunterian Society.—The annual general meeting will be held on April 7th, at 5.30 P.M., at 94, Harley-street, London, W.

Harveian Society of London.—An ordinary meeting will be held in the Paddington Town Hall on April 10th, at 8.30 P.M., when Sir William Willcox will open a discussion on Insulin.

West Kent Medico-Chirurgical Society.—A meeting will be held at the Miller General Hospital, Greenwich, on April 11th, at 8.45 P.M., when Mr. Percival P. Cole will deliver an address entitled the Surgery of the Face and Jaws.

A Chadwick public lecture will be given at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W. 1, by Dr. Charles Porter, on American Public Health from an English Point of View, on April 8th, at 5.15 P.M.

Diploma in Public Health: Instruction in Hospital Administration.—A three months' course of lectures and demonstrations in hospital administration will be given at the North-Western Hospital, Lawn-road, Hampstead, N.W., by Dr. E. W. Goodall, medical superintendent, on Mondays and Thursdays at 4.30 P.M., and alternate Saturday at 10.30 A.M., beginning on April 3rd.

A meeting of Fellows of the Royal Society of Medicine, Sir William Hale-White presiding, will be held at 1, Wimpole-street, London, W., on April 10th, at 5 P.M., to meet the foreign medical officers of health now in this country, and to hear a lecture communicated by Dr. L. Rajchman, Director of the Health Section of the League of Nations, on the Health Organisation of the League. A preliminary address will be given by Mr. John Wheatley, Minister of Health.

Foreign Decorations.—The King has granted permission to wear the Order of El Nahad which has been conferred by the King of the Hedjaz in recognition of valuable services rendered: Dr. W. Dunlop, director of the Royal Hospital, Baghdad; Mr. G. N. Braham, surgeon, Royal Hospital, Baghdad; and Dr. H. C. Sinderson, railway medical officer, Baghdad (Third Class); and Dr. E. A. Mills, chief pathologist, Baghdad (Fourth Class).

Liverpool Child Welfare Association.—The annual meeting was held on March 24th, when the Minister of Health, Mr. John Wheatley, addressed a large gathering in the town-hall. After paying a well-merited tribute to the fame of Miss Beavan, the chairman of the Association, Mr. Wheatley spoke of the spread of education in health matters as being the most valuable part of the work being done. He was delighted to find that the trend of their activities was more and more in the direction of prevention, and in that connexion stressed the immense importance of proper housing. The ideal, he said, was that the whole nation should be one vast child welfare association, showing the same capacity for idealism and sacrifice as the organisation under Miss Beavan's control.

Donations and Bequests.—By the will of the late Mr. William Hirst Shaw, of Bradford, the testator left, among other bequests, £500 to the Bradford Royal Infirmary and £200 to the Bradford Children's Hospital.—The late Mr. Sydney Wynn Graystone, J.P., of Knightsbridge, left on the decease of his wife and brother large bequests to Downing College, Cambridge, for scholarships and other purposes. He also left £100 to Addenbrooke's Hospital.—Under the will of the late Miss Louisa Rogers, of Shrewsbury, the testator left, among other bequests, £1000 to the Royal Salop Infirmary; £500 to the Eye, Ear, and Throat Hospital, Shrewsbury; £250 to the Shrewsbury Dispensary; and £250 to St. Dunstan's Hostel.—The Chelsea Hospital for Women has received for its new nurses' home £200 from Lord Glendyne in connexion with the fund being raised at the Mansion House.

ASHFORD COTTAGE HOSPITAL.—The fifty-fourth annual report of this institution states that 689 patients were admitted during the year 1923, and 424 operations were performed. These figures show an increase over the previous year, when 613 patients were admitted and 391 operations performed. The daily cost per bed has increased also from 6*s.* 3½*d.* to 6*s.* 8¼*d.* The new apparatus installed in the X ray department in February, 1923, at a cost of £315, has been entirely satisfactory; the work done in this department was nearly double that done in 1922. The number of cases submitted for examination is 264, and 17 underwent treatment. The numbers in 1922 were 162 for examination and 9 for treatment. Mr. Ernest Colville, senior surgeon of the hospital, has been presented by the chairman, on behalf of the committee, with a gold wrist-watch on his retirement from the hospital staff after 38 years' service. It was stated that it would shortly be necessary to increase the capacity of the hospital. Plans had been prepared for double the number of beds now existing, and the cost of the completed work would be from £10,000 to £12,000; but the plans had been laid out in two or three sections. An anonymous offer of £1200 having been received, it was decided to proceed with the first section forthwith, and to build a new ward for six beds, with service kitchen, bathroom and lavatories, a nurses' sitting-room, new kitchens, scullery and larder, a storage room, and a new mortuary. The total cost of these additions would be about £3600.

LIVERPOOL MEDICAL INSTITUTION.—A pathological meeting was held on March 20th, Mr. R. Craig Dun, the senior vice-president, being in the chair. After the exhibition of specimens, which included a unique series of experimental lesions in animals which at least closely resembled those of foot-and-mouth disease, a short discussion took place. Prof. J. M. Beattie gave a brief account of the experimental work done with material obtained from supposed healthy contacts of cases of foot-and-mouth disease and alluded to the almost insuperable difficulties which had been put in his way. In reference to a specimen of epithelioma of the vulva removed with the glands in the groin en bloc by Mr. St. G. Wilson, Prof. Blair Bell spoke of his experience of this operation which had given him uniform success during the last 15 years. Dr. Henry Cohen read a paper on Observations on the Cerebro-spinal Fluid. He reviewed the work of Dandy, Weed, and others on the formation, circulation, and absorption of cerebro-spinal fluid, and gave a brief account of his own work on this subject.

The Relation of Leprosy to Tuberculosis.—A special meeting of medical men of the Liverpool district was held under the auspices of the Liverpool Medical Institution on March 19th, to hear an address by Sir Leonard Rogers on the Problems of Leprosy Research and Their Relation to Tuberculosis. The speaker began by attempting to estimate the number of lepers in the world, assigning at least 500,000 to the British Empire. The size of the problem thus indicated, he proceeded to suggest possible factors in the ætiology of leprosy. Most stress was laid on close contact, especially in warm, moist climates. Sir Leonard Rogers showed maps and statistics with reference to the question of contagion. Although none could claim a high degree of contagiousness for this disease, it was clear that where it did occur it was the result of close contact with actual sufferers. Sir Leonard Rogers proceeded to discuss preventive methods, and described the segregation treatment of the Middle Ages and its effectiveness. The difficulty, he pointed out, was in finding and isolating the early cases, who in Norway, it was estimated, were infective for three years on an average before isolation was carried out. In this connexion the increased susceptibility of young persons was stressed. Modern methods included the abolition of prison-like buildings, the provision of useful work whereby lepers could be made self-supporting, and, above all, improved methods of treatment. He spoke of his attempts to deal with tuberculosis on analogous lines owing to the morphological similarity of the bacillus, and of how this had led him to the introduction of sodium morrhuate in leprosy. This substance, along with ethyl morrhuate, was proving effective in treatment and was much simpler to administer. In conclusion, a series of lantern slides was shown demonstrating the striking results of treatment.

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Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, MARCH 25TH.

Payments to Insurance Practitioners.

Mr. **FREDERICK GOULD** asked the Minister of Health what was the amount of capitation fee now to be paid to panel doctors per panel person; what was the increase, if any, agreed upon; and from what fund would this money be drawn.—Mr. **WHEATLEY** replied: Payments to insurance practitioners for the current year in respect of medical treatment given to insured persons will be based upon a capitation fee at the rate of 9*s.* per annum in respect of each person entitled to medical benefit. The corresponding capitation fee for the years 1922 and 1923 was 9*s.* 6*d.*

WEDNESDAY, MARCH 26TH.

Patients in Venereal Disease Clinics.

Mr. **SOMERVILLE HASTINGS** asked the Minister of Health the percentage of patients treated in the venereal disease clinics during the last year under the age of 18 and 20 years. —Mr. **WHEATLEY** replied: Figures are only available for the first three months of 1923. During that period 6·4 per cent. of the total number of patients attending the treatment centres for venereal diseases for the first time and found to be suffering from these diseases were under 18 years of age, and 7·8 per cent. were under 19 years of age. Figures are not available as regards the number of patients under 20 years of age.

Extension of Insurance Medical Benefit.

Mr. **PALMER** asked the Minister of Health if he would consider the need for medical benefit to be extended to members of approved societies whose service conditions entitled them to a pension at the age of 60 years, and thereby took them out of employment and the provisions of the National Health Insurance Act.—Mr. **WHEATLEY** replied: The hon. Member's suggestion would require legislation, and the matter is one which will, no doubt, be considered by the Royal Commission.

THURSDAY, MARCH 27TH.

Re-assessment by Medical Boards.

Lieut.-Colonel **ASSHETON POWNALL** asked the Minister of Pensions the result of the medical boards held for purposes of re-assessment during the last six months of 1923, showing the percentage of pensions increased, decreased, and unchanged, and the net result.—Mr. **F. V. ROBERTS** replied: During the period referred to 190,000 cases came up for medical re-examination by boards. As a result of this review, in 55 per cent. of the cases pension was renewed at the previous rate; in 21 per cent. of the cases the pension rate was increased; and in 24 per cent. it was reduced. The net result of these changes was a net increase of 0·6 per cent. in the average rate of disablement.

Mental Patients in Prisons.

Major Sir **ARCHIBALD SINCLAIR** asked the Home Secretary whether his attention had been called to the statement in the report of the Prison Commissioners for the year ending March 31st, 1923, with regard to the presence in prison of a class of prisoners who, on account of mental retardation or mental instability, or both, are incapable of profiting by training and discipline, and to a statement by the Commissioners that there was a need for a special form of curative treatment under a specially trained staff in an environment other than that of a prison for these persons; and whether he proposed to take any steps to give effect to this recommendation.—Mr. **HENDERSON** replied: A scheme is now being prepared by the Commissioners to collect unstable mental cases, not certifiable under the Lunacy or Mental Deficiency Acts, and sentenced to imprisonment long enough to justify transfer, in certain selected centres and to place them under the tuition of a specially trained staff and close medical observation.

Child Assault Cases.

Lieut.-Colonel **RUDKIN** asked the Home Secretary whether his attention had been called to the increasingly numerous cases of child assault; and whether he would consider the advisability of appointing a committee, including medical and legal experts, to inquire into these matters and the ratio of convictions obtained in the cases known to the police, the best means of preventing these offences and of dealing with the offenders, and as to the adequacy of the provisions made to protect children and the provision made for the unfortunate victims.—Mr. **Henderson** replied: Yes, Sir, as indicated in my reply on March 6th, a conference has been held at the Home Office when this matter was fully discussed. I am now considering the appointment of a suitable committee for investigation and report. I may add that there is no evidence of any increase in the number of these offences over a period of 25 years.

Tuberculous Persons in Milk Trade.

Mr. **John Harris** asked the Minister of Health whether he would consider the desirability of obtaining powers for local authorities administering tuberculosis regulations to take steps to prevent persons suffering from infectious tuberculosis from dealing directly with the distribution and sale of milk.—Mr. **Wheatley** replied: Yes, Sir.

Special Hospitals for Early Mental Cases.

Mr. **Costello** asked the Minister of Health whether, with a view to providing facilities for the recovery of early mental cases which could not be proved to be dangerous or unfit to be at large, he would take steps to enable and encourage, by means of national grants, the establishment of appropriate hospitals under the management of the health committees, as distinct from the asylums committees, of local authorities. —Mr. **Wheatley** replied: The point raised by the hon. Member will receive the consideration of the Government.

Expenditure of the General Nursing Council.

Mr. **Herbert Morrison** asked the Minister of Health whether he had received from the National Asylum Workers' Union a resolution protesting against the expenditure of the General Nursing Council and asking that the fees charged by the Council should be reduced; and what action he proposed to take in the matter.—Mr. **Wheatley** replied: The resolution to which the hon. Member refers cannot be traced, but I am not prepared to express any opinion on this question until I have received definite proposals from the General Nursing Council as to the scale of registration and examination fees necessary, in their opinion, to make the Council self-supporting.

Lunacy Certification.

Mr. **Rawlinson** asked the Prime Minister whether his attention had been called to the fact that, in the process of certification of an alleged lunatic as ordinarily conducted, the magistrate only heard evidence against the sanity of the individual; and whether he would bring in legislation enabling the alleged lunatic to have the opportunity, if he desired it, of having his case placed before the magistrate by his legal adviser, who should be entitled to test the adverse evidence by cross-examination and, if necessary, to call rebutting evidence.—Mr. **MacDonald** replied: The points raised will no doubt be considered by any Commission that may be appointed to inquire into the Lunacy Laws, and I cannot give any undertaking to introduce legislation in anticipation of such an inquiry.

Monday, March 31st.

Panel Practitioners' Fees.

Mr. **Wheatley**, the Minister of Health, in moving the second reading of the National Health Insurance (Cost of Medical Benefit) Bill, said that the object of the Bill was to provide money to meet the balance of the cost of medical benefit and administration beyond the sum provided for by Section 7 of the Act of 1920. Under that Act the Minister of Health was empowered only to authorise the payment to the doctors of about 7*s.* 3*d.* per head per annum of the insured persons. The Court of Inquiry reported in January in favour of 9*s.* per head, and the Bill provided for the payment of this amount. By the arrangement which he had come to with the approved societies the money was to be found without any grant being required from the Exchequer and without any of the accrued surpluses of the approved societies which were available for additional benefits being earmarked for this purpose. The Bill was for three years. It was hoped that within that time the Royal Commission which he proposed to set up would have reported, and that legislative effect would have been given to its recommendations. The total amount required to tide over the three years, including the statutory allowance of two-ninths from the Treasury, was £1,762,000. The sum to be found for England, Scotland, and Wales respectively varied somewhat because of the differences in the cost of administration in the three countries. The sum required for England was 2*s.* 4½*d.* per head per annum. It was proposed to obtain the money from three sources—first, 2*d.* out of the funds of the approved societies, which they offered because they felt that they were entitled to pay something for the services of regional medical officers who acted as referees, and for the keeping of a central index of insured persons. In order to strengthen the Central Fund for the immediate purpose of the Bill it was proposed to make a special grant of £100,000 from the reserve and to make it from the unclaimed stamps account. The Central Fund being thus further strengthened would be in a position to give them 1*s.* 8½*d.* per head per annum without impairing its efficiency for its main purpose. The approved societies had always large sums of money in the hands of the National Loan Commissioners, held under a guaranteed rate of interest. If the Commissioners obtained more than 4½ per cent., then the excess was credited to a reserve account that went to the benefit of the society. The fund at the moment was in a position to give them 6*d.* per head per annum for the next three years, and the societies had agreed that that should be taken. Clause 2 provided for the transfer of the £100,000 to the Central Fund. Clause 3 re-enacted the provision in the Act of 1922, which enabled societies to provide benefits to members who would otherwise not receive benefits because of prolonged unemployment. Clause 4 extended the Act to Northern Ireland, and Clause 5 applied it to Scotland and Wales. Clause 4 made the Act retrospective to Jan. 1st of this year. The Bill was one on which there was general agreement among all parties concerned.

In the discussion which followed Sir **Kingsley Wood** said he regretted that the Government had not been able to announce the terms of reference to the Royal Commission. It was very important that those terms should be full and ample enough to cover every phase of national insurance to-day. While he believed that the great majority of the medical profession were endeavouring loyally to carry out their contracts, that could not be said of every one of them. He was very glad an important alteration had been made, and that every person who wanted to change his panel doctor could do so immediately by simply taking his card to another doctor on the panel. They would not get an efficient medical service and proper value for the money now being paid while they retained the large panel lists. The present number of 2500 persons on one doctor's panel was far too many.

Dr. **Chapple** contended that if they introduced into the approved societies a wealthy class of member they would make a greater demand on the practitioner, and that was why the practitioners, who were at one time content with a lesser sum, now found that 9*s.* was not enough.

Lieut.-Colonel **Fremantle**, in supporting the second reading, pointed out that the medical profession had not made any undue demand in the terms for which they had stood out. Dealing with the suggestion that the right of the patient to change his panel practitioner was due to the demand of the approved societies, he said that the demand came not from the societies but from the Insurance Acts Committee of the British Medical Association. The latter body had always been keen on absolute freedom of choice both by practitioners and by patients. It was to the committee's credit that they should have demanded this freedom, and he was glad it had been granted. They had also demanded the Commission, and they recognised it was part of a larger series of questions. As to pledges, he said that the one demanded of him by the approved societies was absolutely unjustified. He was not in a position to give the pledge, because he was not in a position to judge of the questions at the time. But the societies demanded the pledges in such a manner that many candidates might well have been afraid to refuse. He was able to refuse, and, as a result, his majority at the election was increased.

The second reading was agreed to without a division.

Tuesday, April 1st.

Imported Chilled Meat.

Viscount **Curzon** asked the President of the Board of Trade if he would state what quantity of chilled meat, acted upon by formaldehyde as a preservative, was being imported into this country by the s.s. *Kent*, or any other ship; if the medical officer of health at the port where this experimental consignment arrives was satisfied that the meat thus preserved with formaldehyde was fit for human consumption; was the meat on this pronouncement to be placed on the market; and what would be the functions in this matter of the departmental committee which was now sitting.—Mr. **Wheatley**, who replied, said: I am informed that the quantity of chilled meat being imported in the s.s. *Kent* is 463 quarters, and I am not aware that any arrangements have been made for further consignments of meat treated by formaldehyde. If the port medical officer of health is satisfied after examination of the consignment that the meat is fit for human consumption it will, no doubt, be placed on the market in the usual way. I understand that the departmental committee on preservatives in food propose to arrange for the inspection of the meat and investigation of the process for the general purposes of their inquiry.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, April 8th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.
Papers:
Dr. Symes-Thompson: The Occurrence of Symptoms following the Simultaneous Use of Adrenaline and Cocaine.
Dr. P. Hamill: The Use of Atropine in Conjunction with Digitalis.
Dr. E. Cowles Andrus: The Clinical Administration of Digitalis in the Form of Powdered Leaf.

Thursday, April 10th.

SPECIAL MEETING OF FELLOWS: at 5 P.M.
To meet the Foreign Medical Officers of Health now in this country, and to receive a communication from Dr. Rajchman (Director of the Health Section of the League of Nations) on the Health Organisation of the League.
A preliminary address will be given by The Right Hon. John Wheatley, M.P., Minister of Health.
Tea and coffee will be served at 4.30 P.M.

NEUROLOGY: at 8.30 P.M.
Discussion:
On the Value of X Rays in the Localisation of Cerebral and Spinal Tumours, with Special Reference to Ventriculography and Lipiodol Injections, to be opened by Mr. Percy Sargent and Mr. Geoffrey Jefferson.

Friday, April 11th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Cases:
Dr. Hildred Carlill: (1) Pathological Laughter in a Woman of 66 with High Blood Pressure; (2) Lightning Pains of Tabes Dorsalis persisting in (inter alia) a Limb which was Amputated in 1910.
Dr. Douglas Firth: Juvenile Myxœdema.
Other cases will be shown.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
Tuesday, April 8th.—5 P.M., Dr. Thomas McCrae: Clinical Features of Foreign Bodies in the Bronchi. (Second Lumleian Lecture.)
Thursday.—5 P.M. (Last Lumleian Lecture.)

SOCIETY FOR THE STUDY OF INEBRIETY, 11, Chandos-street, London, W.
Tuesday, April 8th.—4 P.M., Dr. Bedford Pierce opens a discussion on Mental States in Alcoholism.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
Monday, April 7th.—10 A.M., Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Mr. Simmonds: Surgical Out-patients.
Tuesday.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.
Wednesday.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Skin Department. 2.30 P.M., Mr. Armour: Surgical Wards.
Thursday.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.
Friday.—11 A.M., Dr. McDougal: Electrical Department. 12 noon, Mr. Endean: Venereal Diseases. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Department.
Saturday.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily 10 A.M. to 6 P.M., Saturdays, 10 A.M., to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE. (Prince of Wales's General Hospital.) (At 4.30 P.M.)
Monday, April 7th.—Dr. S. Cochrane Shanks: X Ray Appearances of Tumours of Bones.
Tuesday.—Dr. F. G. Crookshank: Thyroidal Deficiencies.
Wednesday.—Mr. Norman B. B. Fleming: Iritis.
Thursday.—Mr. H. W. Carson: Diagnosis of Cancer of the Rectum.
Friday.—Dr. L. R. Yealland: Clinical Demonstration of Cases.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.
Thursday, April 10th.—4 P.M., Mr. Addison: Hæmaturia. Pyuria.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.
Thursday, April 10th.—5 P.M., Mr. Davies: Abortion.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.
Tuesday, April 8th.—4.15 P.M., Dr. E. M. Brockbank: Thoracic Pain.

MANCHESTER BABIES' HOSPITAL POST-GRADUATE LECTURES.
Friday, April 11th.—5.30 P.M., Dr. Chisholm: Complications met with in the Treatment of Marasmic Infants.

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal Mineral Water Hospital.—P.
Bethlem Hospital, Lambeth-road, S.E.—Two Res. H.P.'s. Each £25 per quarter.
Birmingham, St. Chad's Hospital.—Res. M.O. £100.
Bournemouth, Royal Victoria and West Hants Hospital.—Asst. Hon. Bacteriologist, &c.
British Guiana Diamond Fields.—Government M.O. £500.
Charing Cross Hospital, W.C.—Med. Reg. and Surg. Reg. Each £150. Also Asst. Surg.
Derbyshire Royal Infirmary, Derby.—H.S., &c. Also Asst. H.S., &c. Each £200.
Dublin University, Trinity College.—Prof. of Pathology. £800.
East London Hospital for Children, &c., Shadwell, E.—H.P. £125. Also Afternoon Cas. O. £120.
Gold Coast, Takoradi Harbour Construction Works.—M.O. £1000.
Herefordshire General Hospital.—H.P. £200.
Hospital for Consumption and Diseases of the Chest, S.W.—H.P. £50.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—H.P. £100. Also Asst. P.
Kensington, Fulham, and Chelsea Hospital, Richmond-road, Earl's Court, S.W.—Sen. and Jun. Res. M.O.'s. £100 and £75 respectively.
Leeds University, Dept. of Pathology and Bacteriology.—Lecturer in Pathology. £500.
Manchester, Baguley Sanatorium.—Third Asst. M.O. £400.
Manchester, Royal Manchester Children's Hospital.—Asst. M.O. £150.
Metropolitan Hospital, Kingsland-road, E.—Sen. H.P., H.S., Jun. H.P., H.S., and Two Cas. O.'s. Each £100. Hon. Anæsthetist.
Middlesex Hospital Medical School, W.—Asst. to Prof. of Experimental Path. £350.
Northampton General Hospital.—Hon. P.
Pontefract, General Infirmary and Dispensary.—Res. Surg. O. £400.
Rainhill, County Mental Hospital.—Asst. M.O. £300.
Royal College of Surgeons of England.—Examiners.
Royal Northern Hospital, Holloway, N.—H.P. and H.S. £75.
Somerset Mental Hospital, Wells.—Asst. M.O. £300.
Southampton Free Eye Hospital.—Locum Tenens Ophth. H.S.
Stafford, Coton Hill Mental Hospital.—Med. Supt. £600.
Throat Hospital, Golden-square, W.—Hon. Surg. Reg.
Tunbridge Wells General Hospital.—H.S. £160.
Union of South Africa Government Mental Hospital Service.—Asst. P.'s. £460.
West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Cas. P. £200.
West London Hospital, Hammersmith-road, W.—Hon. Med. Reg.
Willesden General Hospital, Harlesden-road, N.W.—H.S. £100.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Kidwelly, Carmarthen; Levenwick, Shetland; Scalloway, Shetland.

Births, Marriages, and Deaths.

BIRTHS.

Coope.—On March 26th, to Rosalind, the wife of Robert Coope, M.D., M.R.C.P., of 28, Rodney-street, Liverpool, a daughter.

MARRIAGES.

Langwill—Judd.—On March 22nd, at the Church of St. Martin-in-the-Fields, Archibald Langwill, M.D., F.R.C.S.E., to Marguerite Ethel, elder daughter of Henry Kerridge Judd, of Edgware.

DEATHS.

Claremont.—On March 27th, of typhoid and broncho-pneumonia, Ethelberta Claremont, M.B., M.S. Lond., F.R.C.S. Eng., aged 31.

Eccles.—On March 24th, at "Nafferton," Broadhurst-gardens, Hampstead, Dr. Charles Henry Eccles, aged 58 years.

Johnston.—On March 25th, at Princes-square, W., James Johnston, M.D., F.R.C.S. Edin., formerly of Shanghai, in his 86th year.

MacBride.—On March 18th, at 74, Rodney-street, Liverpool, Mary Monica MacBride, Sister on the Staff of the Royal Infirmary, Liverpool, from 1880 to 1905, aged 69 years.

MacCulloch.—On March 26th, at The Bury, Branksome Park, Bournemouth, William Mansell MacCulloch, M.D. Edin., at one time Jurat of the Court of Guernsey, aged 75.

Taylor.—On March 29th, at Weoley-hill, Birmingham, E. Claude Taylor, M.D., M.S., F.R.C.S., formerly of Hampstead, aged 53.

Williams.—On March 24th, at Bronheulog, Burry Port, Owen Williams, J.P., L.R.C.P., L.R.C.S., aged 70.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

CANADA'S LITTLE BLUE BOOKS.

"The Canadian Mother's Book" was first published in 1921, and offered free to any mother who cared to apply for it. By 1923 more than 220,000 copies had been supplied, largely in response to individual requests. The mothers themselves christened the pamphlet "the little blue book," and, encouraged by the eager demand for it, the Canadian Department of Health proceeded to issue other little blue books. There are now three different groups—the Mother's Series, the Home Series, and the Household Series—each containing five pamphlets. The whole 15 are the work of Dr. Helen MacMurchy, chief of the Division of Child Welfare; and anybody who has been tempted to feel that all there is to say about child welfare has already been said will thank the author for her freshness and vitality both of thought and expression.

The first series is perhaps the most generally useful, since the fundamental needs of mothers, fathers, and children are much the same in all countries. Dr. MacMurchy sets a high standard, and believes the best of her average family, assuming as a matter of course that each member will be anxious to take his or her share in the home-making as soon as it is understood. She utters wise warning against what is perhaps the commonest mistake of an unselfish mother—allowing herself to become a perfect drudge, and spoiling the family at the same time.

> "Teach your children to help you and to help themselves. Don't do anything for them that they can do for themselves.
>
> The division of labour is a great principle in the home. 'Company manners' are the worst manners in the world. Good home manners are the only kind worth having—they never wear out."

Dr. MacMurchy sets great store upon the mother's preservation of her individuality, her tastes and interests, and advises her, at all costs, to arrange things so that she does not work the whole of any day. Only in this way can she possess herself, and preserve the spirit of serenity which goes so far to produce a happy home.

When Dr. MacMurchy refers directly to questions of children's health, her remarks are precise and very much to the point. For example:

> Sore eyes in a little baby are very dangerous. Get the doctor this minute.
>
> It is wrong to subject children at the formative period of life, when impressions are so deep and lasting, to the shock and pain of contact with mental illness.
>
> Children can't hurry. Their reaction time is longer than ours. Parents and teachers who talk about "instant obedience," please take notice. Instant obedience in you is about ten times faster than in a child.

While endorsing what is said about the high value of milk as a food for children, the injunction that *all* milk should be pasteurised would be regarded here as a little sweeping. It is useful to be reminded once again that milk is a solid food about one minute after it has been swallowed, so that it should be taken slowly.

There are many excellent hints in the Home Series and Household Series, including advice as to such matters as posture and avoidance of unnecessary fatigue, but these pamphlets are of rather less universal application than those in the Mother's Series. In reading them an impression is received of wide spaces, open-air conditions, and a general atmosphere of elbow-room, which is unfortunately far from familiar to poorer housewives in this country. An agreeable sense of surprise is also conveyed by the long list of Government departments and voluntary agencies to which the mother is invited to write for any help or advice she may require, being assured of their pleasure in hearing from her and their desire to be of service.

"RECOMMENDED BY THE PORTER."

The ideal head-porter at the large hotel is presumed by the public to be able as well as willing to supply information to the visitor on any topic under the sun. And there must be few of us who have not cause to remember with gratitude the practical help which we have received from these energetic and adaptable polyglots. But while the advice is valuable on such subjects as the selection of suitable shops for our purchases, and of suitable routes for our future journeys, as on passport and currency difficulties, the head-porter's opinion on the relative merits of the available medical practitioners has to be received with caution. The traveller should hesitate, we feel, to accept the porter's recommendation of a medical man in preference to the hotel doctor. The latter practitioner has been chosen by the management for good reasons, in which the reputation of the establishment plays its part; the selection of the porter may have a different bias. But the situation is not always as simple as this. A complaint reaches us, for example, from a hotel doctor in Bombay, stating that a notice had been placed in a telephone box of the hotel giving detailed information as to where another medical practitioner was to be found at various times of the day. Our correspondent comments unfavourably on the professional position displayed, because he believes that the medical man in question either is prevented or should be prevented by his official position from competition in private practice. That is a matter which could easily be settled, we suppose, by submitting a question to the proper authority, but it is clear that this is not a case of "Recommended by the porter." The hotel management has the control of its own telephone boxes, and must have sanctioned or approved the appearance of the notices.

"MOTHERCRAFT."

We have received from the National League for Health Maternity and Child Welfare (Carnegie House, 117, Piccadilly, London, W. 1) a copy of the fourth edition of a popular manual on "Mothercraft." This is a selection from courses of lectures on infant care, delivered under the auspices of the National Association for the Prevention of Infant Mortality. The book has been revised, new chapters having been added on the Nervous Child by Sir Maurice Craig, the Backward Child by Dr. A. F. Tredgold, and Diseases of the Skin in Infancy by Dr. H. G. Adamson. More than 30 separate subjects are dealt with by acknowledged experts, and the book justifies its claim to be a complete and up-to-date work of reference on all that relates to the care of infants and children under five. The price has been reduced from *5s. 6d.* to *4s. 6d.*, post free.

HOSPITALS AND DISPENSARIES IN BURMA.

During the year 1921 the number of patients treated in the 278 hospitals and dispensaries in Burma amounted to 1,885,944, of which 79,858 were in-patients; the daily average of the latter under treatment being 3445. The very great increase in the beneficent work of these institutions is shown by comparison with the figures for 1900, when the total treated numbered 858,689, of whom 36,095 were in-patients. For the province as a whole malaria and its results furnished the largest number of patients (12,761 indoor and 256,776 outdoor); after this, diseases of the eye (1742 indoor and 118,839 outdoor). Venereal diseases caused 7252 admissions to hospital, and in addition 44,792 outdoor patients were treated. Of those admitted to hospital, 4913 were suffering from syphilis, 51 cases terminating fatally; among the 1608 cases of gonorrhœa or its results (rheumatism, ophthalmia, &c.) 18 deaths occurred; in a third category of "diseases of venereal origin—non-infective, i.e., non-syphilitic venereal sore, inflammation of lymphatic glands, salpingitis, pelvic abscess," are included 731 cases, with 8 deaths. The total operations performed numbered 57,181, an increase of 954 on the year preceding. Several new hospitals have been opened, or are under construction, but it is stated that "most of the hospitals throughout the province are of wood, unsuitable, out of date, and many of them in indifferent repair." The report is prefaced by a very interesting résumé of the progress and development of hospital construction in Burma, by Mr. W. B. Brander, Secretary to the Government. The first hospital was established at Akyab in 1826; the first separate report on the hospitals and dispensaries in the province related to the year 1865–66, when there were 13 institutions at work, treating in all 2985 indoor and 19,804 outdoor patients. Sir Reginald Cradock, Lieutenant Governor of Burma, in a Government resolution, records his "sincere appreciation of the services which Lieut.-Colonel Entrican has rendered to the cause of medical science in this province," and "believes that whatever the future may bring forth, the people of Burma have now too high an appreciation of the value of the methods of Western medicine to discard them for the empirical methods and antiquated ideas of systems not based on accurate scientific knowledge."

There are two lunatic asylums in Burma, one at Rangoon, accommodating 632 patients, and the other at Minbu, on the Irrawaddy near the southern border of Upper Burma. In both asylums there was overcrowding during 1921; at Rangoon the daily average inmates numbered 753, the accommodation being planned for 632; and at Minbu the space allowed for each inmate was only 36 square feet. The admissions numbered 209, and in addition there were 21 observation cases; the total number, 230, being a slight increase on the corresponding figure (220) for the previous year. The discharges numbered 138, of whom 87 were "cured." In regard to the general health of the inmates, the report does not enter into particulars; the death-rate was 7·74 per cent. of the average strength, a slight increase on the previous year (6·77 per cent.); at Minbu there were no deaths. Tuberculosis accounted for 21 deaths out of the total 69. As to causation of insanity among the inmates, Colonel Entrican remarks on "the continued increase of cases attributed to drugs, from 23 in 1920 to 33 in 1921." For several years past this increase has been going on steadily.

Lumleian Lectures

ON THE CLINICAL FEATURES OF

FOREIGN BODIES IN THE BRONCHI.

Delivered before the Royal College of Physicians of London

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LECTURE I.

Delivered on April 3rd, 1924.

INTRODUCTION.

THE subject of these lectures is, doubtless, regarded by many as one of the curiosities of medicine, and having but slight practical importance. There are no statistics to show the frequency with which foreign bodies gain entrance to the bronchi, but it is certainly much more common than is generally recognised. The increase in the number of cases recognised in a community, as more attention is directed to the condition, is parallel to the increase in the number of cases of pernicious anæmia in a district which results from better knowledge of the disease. The figures from the Jefferson Hospital are no guide, for patients come to Chevalier Jackson from all parts of the United States and Canada.

The opportunity to study the clinical features of this problem has come through the kindness of my colleague, Prof. Chevalier Jackson, whose work in bronchoscopy stands out as one of the great contributions of American medicine. Only those who have seen his clinic can realise fully the skill of his technique, and the thoroughness and care with which the problems are studied.[1] From the medical side the procedure adopted has been to study the patients without any knowledge of the X ray report, and in many cases without knowing the history, so that the physical findings have to be interpreted without any other information. The object is to determine (1) whether a foreign body is present, (2) where it is situated, and (3) its nature, if possible.

The causes responsible for the entrance of foreign bodies into the air passages are inherent in human nature and are not peculiar to any country. The most important factor in adults and older children is the reprehensible habit of using the mouth as a sort of hold-all for objects such as pins, tacks, nails, &c. The individual is startled, coughs, laughs, speaks, or makes a sudden movement, and with the succeeding inspiration the object passes into the air passages. In small children there is a common tendency to introduce any object, whose size does not forbid, into the mouth, and the possibility of aspiration into the trachea is always present. The factor of imitation is also important. The child sees the mother or nurse putting pins into the mouth, and nothing is more natural than to follow the example. A dentist may permit an extracted tooth, a dental fitting, or a small instrument to fall back into the pharynx whence it may pass into the larynx. (Fig. 1.) Pieces of bone may be aspirated, and in this case hurried eating is usually responsible. Many candies contain nuts, which may be aspirated after the soluble candy is dissolved. In general, we may regard carelessness as the main contributing cause in those who have reached years of discretion. In the cases in which the foreign body gains entrance during anæsthesia the patient is innocent, but there is usually carelessness on the part of someone.

Variety of Objects Inhaled.

The variety of objects, both in size and character, which may gain entrance to the air passages is remarkable. The largest of which I know was an oyster which passed as far as the bifurcation of the trachea, a portion passing into each bronchus and causing complete obstruction, the patient dying quickly. The smallest was a portion of nut aspirated while the patient was chewing. The diverse character of objects is worthy of note. As might be expected, pins are common, both the ordinary variety and safety-pins. (Figs. 2 and 3.) The latter are often aspirated when open, adding to the difficulty of extraction, as the point often penetrates the wall of the trachea or bronchus. Tacks and small nails and screws are comparatively common, the brass-headed variety being especially frequent in small children, whose attention is, no doubt, attracted by the appearance. (Fig. 4.) Small toys and portions of toys are not uncommon. (Fig. 5.) Buttons, beads, and small pieces of jewellery are easily aspirated. Bones may pass into the air passages, especially soft chicken bones. A very important and large group includes nuts, beans, and seeds. (Fig. 6.) In the United States the peanut is a favourite article of consumption—alone or in candy—and either a whole nut or a portion is easily aspirated. The folly of giving nuts to young children who cannot chew them is evident. The form of candy which contains nuts is a frequent source, as after the candy is dissolved the nut remains. A child often eats rapidly and chokes easily, and as this is followed by a deep inspiration the aspiration of a portion of nut readily follows. Grains of corn, various seeds, especially of the water-melon, and pieces of grass and bark are among the objects which gain entrance to the air passages.

The relative frequency of the substances of vegetable origin is shown by the figures of 100 consecutive cases. A peanut, or a portion of one, was found in 45 cases, a grain of corn (maize) in 17, a water-melon seed in 15, and miscellaneous objects in the remainder. This last group includes shells of various nuts, beans, almond nuts, walnuts, coffee-berry, apple-stems, burrs, &c.

The influence of the flora of a district is well demonstrated by H. M. Taylor,[2] of Florida, who reports a number of cases in which the sand spur, which is common in that State, gained entrance to the air passages. This has sharp barbed spines, which usually catch in the larynx.

The determining factors are many. While having an object in the mouth the individual speaks, laughs, coughs, makes a mis-step, or is startled. The next inspiration, which may be an unusually strong one, draws the object into the larynx. The contact of a foreign body excites cough, and the tendency to take a deep inspiration before coughing naturally favours aspiration of the substance. Everyone has experienced the discomfort of having a drop of water or a crumb "go the wrong way." This often occurs without any evident reason. If an object is held in the mouth it may pass into the air passages just as easily. Some of the cases result from various combinations of circumstances. For example, a mother was holding her child, aged 3 months, in her lap when a small open safety-pin insecurely fixed in the mother's dress fell into the child's mouth and passed into the larynx. The pin was removed 36 hours later, the child being none the worse. In another case a man was asked to pin his nephew's collar at the back. He placed the pin in his mouth and the nephew then gave him a sudden blow on the abdomen with his elbow. There was a natural sudden start followed by a deep inspiration and the pin disappeared. It was removed some days later from a bronchus.

As a rule the foreign body travels downward in the air passages as far as possible. In a certain proportion of cases the body remains in the trachea; this may be for a time only or until removed. Permanent lodgment in the trachea may result from the size of the object in some cases, but more often from its shape or from its having a sharp point which becomes fixed in the wall. The object is more likely to enter the right main bronchus than the left, the proportion entering the right side being about 66 per cent.

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[1] Chevalier Jackson: Surgery, Gynecology, and Obstetrics, March, 1919, pp. 208–268.

[2] Jour. Amer. Med. Assn., 1921, 77, 685.

Dr. Jackson's work has shown that the most frequent site of lodgment is at or just below the giving off of the right upper lobe bronchus and the next most frequent the corresponding spot on the left side. Next come the stem bronchi, the dorsal branches being more often invaded than the ventral branches. The branch most frequently invaded is the large posterior branch of the left lower lobe bronchus which is given off immediately below the upper lobe bronchus.

Symptoms at Time of Aspiration.

A study of the symptoms at the time of aspiration is important, because in many cases the diagnosis is not made because there was no special resulting distress. There may be great variation in the immediate symptoms. If the body remains in the trachea there is usually extreme distress with dyspnœa, decreased if the object passes into a bronchus. A movable body in the trachea usually causes marked distress. An object such as a safety-pin may result in slight symptoms only. In many cases there is considerable distress with choking, strangling, and coughing, which, however, soon lessen. In some cases in adults who knew that the object had passed into the air passages, the statement is made that there was surprisingly slight discomfort. Naturally, the size and character of the object influence markedly the severity of the initial symptoms. Certain cases in adults in which there was no knowledge of even the possibility of a foreign body having gained entrance to the air passages prove that there may not be sufficient symptoms at the time of aspiration to attract attention. Some of the accounts given by the patients are as follows:—

1. A woman was having dental work done, and a small dental instrument was placed in a root canal. She felt it slip out of the tooth and lodge on the tongue. She tried to take hold of it, but it slipped from her fingers into the air passages. She had an attack of severe coughing, but nothing more.

2. A man standing on a ladder and holding a staple an inch long in his mouth was asked a question ; in answering it the staple disappeared. There were no symptoms of any kind at the time. Next day he had a tickling sensation in the throat, which led him to consult a physician.

3. While a dentist was fitting a gold bridge it slipped from his hand and was aspirated. The patient had a momentary sensation of something in the throat, and an attack of coughing much the same as if a drop of fluid had " gone down the wrong way." The lack of any respiratory distress led to the view that the object had been swallowed.

4. A child came into the house and announced that she had swallowed part of a toy. There was such an absence of disturbance of any kind that the parents refused to believe her. The truth of her story was proved seven years later by the removal of the object.

5. A young woman aspirated a safety-pin, which she said " went down as easily as a drink of water."

These cases illustrate how little disturbance there may be from the aspiration of a foreign body. Between them and the cases with a maximum severity of symptoms, as when the body is in the trachea or sets up a severe general tracheo-bronchitis, there is every variation. In many patients after a period of distress and severe cough the main complaint is of cough and dyspnœa, which vary greatly in severity. In young children nothing may be known of the initial symptoms ; the child may be too young to tell or may be frightened and make no mention of the happening.

After the symptoms which occur at the time of aspiration, special importance belongs to the period after the foreign body has gained entrance. The first symptoms may be of short duration and following this there is often a *quiescent interval* in which symptoms are entirely lacking or are so slight that they do not attract attention. This quiescent period has often been responsible for the opinion that it was impossible that a foreign body was in the air passages. This symptomless period is most deceptive, as the initial manifestations, which may be slight or severe, are quite forgotten when later symptoms appear and an association between the two is not recognised. Many such cases might be reported.

Nail in Bronchus.—A boy, aged 14 years, was admitted on Oct. 8th, 1923, without any complaint of symptoms, but a knowledge of having " swallowed " a nail. On Oct. 6th, 1923, he had a nail, from which the head had been removed, in his mouth. He laughed and the nail disappeared. It stuck in his throat for a short time, causing gagging, and then he felt it pass downward. After this he did not have a symptom of any kind. His mother insisted on an X ray study, which showed the nail in the left lower lobe bronchus. The only sign observed was decreased expansion in the lower left thorax.

A boy, aged 6 years, was admitted on Nov. 12th, 1923, complaining of cough and wheezing respiration. About two and a half years before the child became very ill, without any definite cause, and the condition was diagnosed as pleurisy. The mother thought that he had been playing with a nail which disappeared. The child recovered and seemed perfectly well. Some time later the child began to cough, and this gradually became more troublesome. In October, 1923, an X ray plate was taken, which showed the nail in the right lower lobe bronchus. The child showed lack of both physical and mental development, and extreme clubbing of the fingers. The breath had a very foul odour. The signs over the lower right lung were marked and varied from day to day, evidently depending on the relative amounts of air and secretion present. The blocking of the bronchus was not complete. At bronchoscopy (Jackson) a stricture was found in the lower right lobe bronchus, below which was a cavity containing foul pus in which the nail was found.

This period of freedom from symptoms is specially emphasised, as ignorance of its occurrence has so often led to the supposition that a foreign body could not be present owing to the absence of symptoms. In many cases this quiescent period does not occur, and symptoms are constant from the time of aspiration.

Resulting Changes.

It is evident that many factors may influence the changes which result from the presence of the foreign body. Some of these are worthy of discussion.

1. *Age.*—The air passages of infants and young children react much more severely to the irritation of a foreign body than do those of older children and adults. This applies especially to the subglottic region in children below a year and a half of age. Swelling may be excited by many factors, and among foreign bodies the irritation produced by a nut is specially acute.

2. *Trauma.*—This may be direct, as when the foreign body is moved about actively by respiration and cough, especially in the trachea, or by injury from the point of a pin or the edges of a sharp object. Infection of the tissues may result if the mucosa is injured.

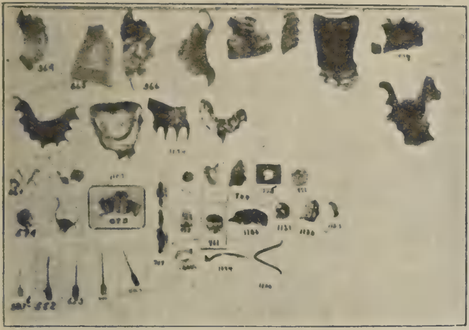
3. *Mechanical.*—The foreign body may injure the mucosa to a greater or less extent. In the case of a bean the absorption of moisture may cause it to swell and so increase the pressure. The swelling of the mucous membrane, which results from inflammation, acts in the same way. The interference with the passage of air is discussed subsequently.

4. *Special Forms of Irritation.*—These are seen particularly with nuts, beans, and substances of vegetable origin. A most intense tracheo-bronchitis is set up, which requires special discussion.

5. *Infection.*—This may result quickly or slowly. If very intense, as in the peanut cases, this may kill the patient in a short time. In the more chronic cases there is the formation of foul pus often associated with abscess formation and bronchiectasis. Fibroid changes may follow, and bronchial stenosis is common. The formation of abundant granulations is common, and these may be found above the foreign body, evidently sometimes due to its position having shifted.

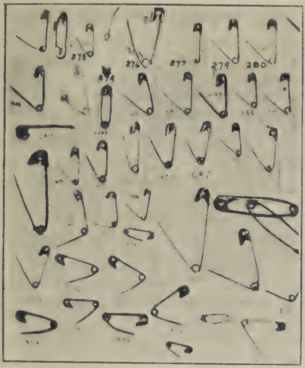
As these changes may occur in many combinations, it is evident that the resulting physical signs must

FIG. 1.



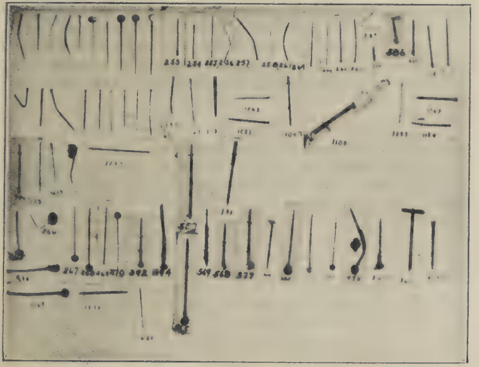
Dental plates and instruments. The largest plates were removed from the œsophagus.

FIG. 2.



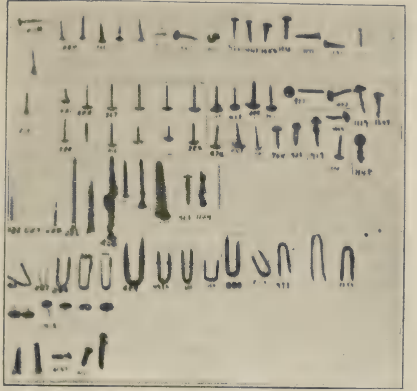
Safety-pins removed from the trachea and bronchi.

FIG. 3.



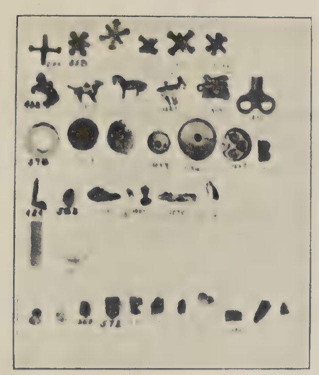
Pins of various kinds removed from the bronchi.

FIG. 4.



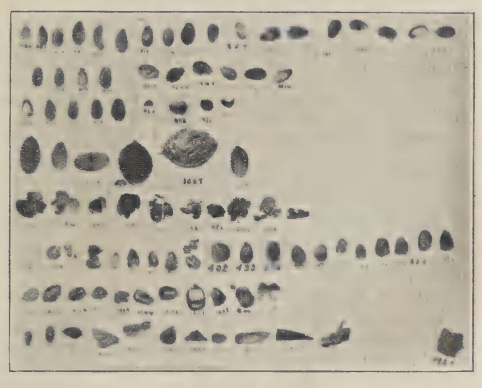
Tacks and staples removed from the bronchi.

FIG. 5.



Bullets and toys. Some of the latter were removed from the œsophagus.

FIG. 6.



Seeds, shells, &c., removed from the bronchi.

show great variations. This is particularly marked if the blocking of the bronchus is not complete, and in this case the signs may change from hour to hour. Many of the resulting conditions require time for their development, and so the picture in acute recent cases differs much from chronic cases.

FOREIGN BODY IN THE TRACHEA.

The symptoms are usually marked and vary with several factors, of which the size and character of the foreign body are important. If the body is large enough to cause complete or nearly complete obstruction, death results rapidly with asphyxia. Many foreign bodies in the trachea are movable, and the movements may be felt by the patient. If the foreign body becomes fixed the symptoms may be few, as, for example, when the point of an open safety-pin becomes fixed in the wall of the trachea. Pain is not common, but is complained of occasionally. *Dyspnœa* is marked as a rule, and is due both to the body itself and to the subglottic swelling resulting from trauma. *Cyanosis* is usual, the degree depending on the extent of obstruction. *Cough* generally begins at once, and may be almost continuous or paroxysmal. It may suggest pertussis or may have a croupy character which always suggests subglottic swelling. Cough is most marked when the foreign body is movable, and one phenomenon of importance is the sudden shutting off of the expiratory air and of phonation during the act of coughing. A loud *wheeze* is usually present. This sound is difficult to describe, but when once heard is easily recognised. It differs somewhat from the wheezing sounds of bronchial asthma, being higher pitched and more intense. It may be heard with inspiration or expiration, sometimes with both. It is heard at the patient's mouth, either with the ear or by the stethoscope, with the bell held close to or even in the mouth. It varies greatly in loudness. It is not heard on auscultation over the chest wall as a rule. It may be heard at some distance from the patient. The designation "asthmatoid wheeze" has been given to it by Jackson. The voice may be hoarse. In some cases there is a remarkable *slapping sound* which may be present with each respiration, only with a deep breath or with the act of coughing. It was very marked in a child with a water-melon seed in the trachea, in whom the sound produced by the seed striking against the larynx could be heard at some distance. At the same time the *impact* may be felt by the finger on the trachea. There is sometimes a curious sound heard, which has been termed "tracheal flutter." The examination of the thorax shows little except on auscultation. There is no difference between the sides on inspection or percussion. On auscultation the breath sounds are usually harsh and loud, the degree of change depending largely on the degree of obstruction. If the foreign body has caused much irritation and resulting secretion, which passes into the bronchi, there are many coarse râles heard throughout both sides of the chest.

Occasionally a foreign body in a bronchus is moved upwards into the trachea, in which case there may be a sudden onset of severe symptoms. In one case this occurred while Dr. Jackson was introducing the bronchoscope. There was a sudden appearance of cyanosis which disappeared when the foreign body slipped down into the bronchus of the other lung. The passage of the body into a bronchus results in a decrease in the symptoms, and the appearance of the special signs due to blocking of a bronchus. We have observed this sudden change in both directions in several patients.

Some illustrative cases of foreign bodies in the trachea are given.

Grain of Corn in Trachea.—A boy, aged 3 years, was admitted on Sept. 6th, 1923, with the history that on August 27th, 1923, he was removing the grains from a dry cob of corn (maize) with his teeth. Suddenly he had a severe choking attack, and following this almost constant cough and wheezing respiration. The child showed marked inspiratory dyspnœa, suprasternal retraction, and depression over the lower third of the sternum, which was increased with each inspiration. The percussion note was hyper-resonant throughout. Inspiration was loud and prolonged, while expiration was scarcely heard. There were coarse rumbling sounds over the whole thorax. The slap against the larynx was well heard and felt, and the tracheal flutter was present. On bronchoscopy (Jackson) the subglottic tissue was so swollen that the sides nearly touched, and the laryngeal and tracheal mucosa was intensely inflamed. The grain of corn was found at the bifurcation partially occluding both bronchi. Tracheotomy had to be done subsequently; the child made an excellent recovery.

In this case the grain of corn had produced marked changes, and in all probability death would have soon resulted. The picture in the case of a metallic foreign body may be very much less severe, and it may remain for some time without doing serious damage.

Safety-pin in Trachea.—A child, aged 9 months, was admitted on April 7th, 1919, with apparent difficulty in swallowing. The day before the child swallowed an open safety-pin. The mother saw the pin in the child's mouth and made an unsuccessful attempt to remove it. There was no dyspnœa or cough, and the only symptom was an apparent disinclination to swallow. The examination was absolutely negative. There was no distress or dyspnœa, and no abnormal signs found in the thorax. The X ray study showed the safety-pin in the trachea, point upwards, and the keeper-end just in the opening of the glottis. There was acute laryngo-tracheitis found; the pin was removed by Dr. Jackson in seven seconds.

The *diagnosis* of a foreign body in the trachea is not difficult in the majority of cases, especially if there is a definite history of choking when there was an object in the mouth. The greatest difficulty is found in young children, especially if the history is indefinite. Subglottic swelling is common, giving hoarseness and a croupy cough. Naturally *diphtheria* is suspected, and an interesting commentary on this is the number of patients with foreign bodies in the trachea to whom diphtheria antitoxin had been given. If the foreign body shows in the X ray plates there is no difficulty. As the metallic bodies give the least in the way of symptoms and signs but show in the X ray plate, they should not be missed if the suspicion of a foreign body is entertained. With bodies non-opaque to the X rays there are usually more symptoms and signs and so the diagnosis should be suggested. The occurrence of a "wheeze," the "audible slap," and the palpation of the impact of the foreign body are practically pathognomonic. In the absence of the last two, care should be taken not to be misled by the signs of a foreign body in a bronchus for the recognition of which a proper examination of the thorax should be sufficient. To exclude *diphtheria* direct laryngoscopy with the taking of cultures is usually sufficient. Considerable difficulty arises from trauma due to a previous bronchoscopy in which nothing was found. Here the symptoms are due to swelling, and it may be difficult to pass judgment until a few days have passed. If the symptoms become so severe that tracheotomy is indicated, the diagnosis can then be made.

FOREIGN BODIES IN THE BRONCHI.

When one considers the great variety of foreign bodies that have gained entrance to the bronchi, it is evident that the resulting conditions and physical signs must vary, and it may be of value to discuss some of the factors which influence the clinical picture. (1) *Size* and *shape* of the object. This influences the situation at which the foreign body lodges and the degree of obstruction produced. In general, objects pass as far down the bronchi as possible. (2) *Character* of the foreign body. This is of great importance, especially with regard to the general reaction. For example, a closed safety-pin causes, for a time at any rate, very little reaction or inflammation. Metallic foreign bodies act by causing local irritation and obstruction to which infection and the formation of pus are added subsequently. Certain substances, in addition, set up a most intense inflammatory process, apparently through some irritant action. Nuts and other vegetable substances belong in this category, and to them special attention will be given subsequently. (3) There may be several particles of a foreign body aspirated, as, for example, when a nut is being chewed and a number of small particles pass into the bronchi. (4) The amount of resulting secretion and irritation varies.

With regard to the bronchus and lung, there are a number of possibilities which apply to a lobe or a whole lung. This is true not only as regards the affected portion of lung, but there may be a great variation as regards the condition of the other lung and the position of the heart. When a foreign body lodges in a bronchus there are several possibilities.

1. *It may plug the bronchus completely.* In this event the air in the affected lung is rapidly absorbed. With this one of two things, or a combination of both, results. The lung may collapse or there may be secretion into the air cells, and apparently an increase of fluid in the tissues so that the lung becomes "water-logged." It may be impossible from the signs over the lung to decide which is present, but if any considerable portion of lung is involved the position of the heart and diaphragm is of value. In many cases the condition seems to be a combination of collapse and increase of fluid content. Evidently the view that there may be increase of the fluid content is difficult to prove, but the points supporting it are: (*a*) signs suggesting that the portion of lung contains no air; (*b*) the X ray picture shows a dense shadow; and (*c*) the rapid clearing after the removal of the foreign body. A solid exudate could not be absorbed with the rapidity with which such a lung clears. This may require only a few hours. There is always the formation of pus below the foreign body if it is present for any time. The affected area shows limitation of movement, absence of vocal fremitus, dullness on percussion, and absence of breath sounds and râles. If the patient is seen before the air is absorbed there may be tympany on percussion. In children the note frequently has a marked tympanitic quality, sometimes over small areas and for varying periods. Difference in the degree of collapse and the amount of secretion may explain this. In children distant breath sounds may be heard, possibly conveyed from the opposite side, especially in the back. The unaffected lung shows *compensatory* emphysema.

2. *The foreign body allows air to pass in but not out.* This is associated partly with the change in the bronchi during inspiration and expiration. With the former the bronchus dilates, and so may permit air to pass the foreign body; with expiration the bronchus contracts and so may shut down tightly on the foreign body, not allowing any air to pass. (Fig. 7.) The result is that the affected lung or lobe becomes over-distended with air—*obstructive* emphysema. The percussion note shows hyper-resonance or tympany, and vocal fremitus is usually absent. The breath sounds are absent as a rule, but occasionally they are heard during inspiration. The presence of râles is variable; they are heard in some cases. The picture is in some ways much like pneumothorax. In a few cases pneumothorax has occurred, apparently from rupture of an air vesicle, but the amount of air which escapes has not been large. In other patients air has escaped into the mediastinal tissues. The respiratory movements disappear, the diaphragm is depressed, and the heart is displaced to the unaffected side. In such an event it is easy to mistake the side involved, both by the physical signs and the X ray study. The unaffected lung apparently has less resonance, and in the X ray plate shows a greater shadow in contrast to the over-distended lung.

3. There is *partial blocking* of the bronchus. In this event some air passes in and out and secretions can escape. Depending on the extent of the escape of secretions the signs change, as the relative amounts of air and secretion vary from time to time. There is decreased expansion of the affected side, and the vocal fremitus is diminished. The breath sounds are heard, usually rough and blowing, sometimes with a curious whistling or snoring character. Râles are numerous and of many kinds, but usually coarse, musical, or snoring.

Certain other factors operate to a varying degree.

1. There is nearly always some *swelling of the mucous membrane.* This tends to close the bronchus, and, in many cases in which the foreign body itself could not plug the bronchus, as, for example, a small bar pin, the resulting swelling does so.

2. *Granulations.*—These form rapidly and may play a considerable part in causing obstruction. In some cases they extend upwards in the bronchi. Thus a patient when first seen may have a foreign body blocking the lower lobe bronchus with the bronchus to the upper lobe quite open. Gradually the upper lobe bronchus becomes obstructed, and at bronchoscopy the granulations extend to the bifurcation of the trachea, the foreign body being found in the lower lobe bronchus. In many such cases strong effort, as in violent coughing, may force secretion through the granulations. The foreign body may be found embedded in a mass of granulation tissue.

3. *Secretion.*—This forms very rapidly and is always present below the foreign body. With obstruction to its escape it increases in amount and may be forced out occasionally. Air may gain entrance as this occurs. Secretions frequently pass over to the bronchi of the other lung or to an unaffected lobe and cause changes there. In some cases this is so marked that changes in the physical signs are found in the lower parts of the other lung. If the foreign body is a nut, which was being chewed at the time of aspiration, there is the possibility that small particles may have passed down to the side other than that which contains the largest portion. One point which is sometimes useful in diagnosis is the effect of atropine on the secretions. It may check the secretion so that the râles disappear entirely for a time and the character of the breath sounds can be more easily studied.

FIG. 7.

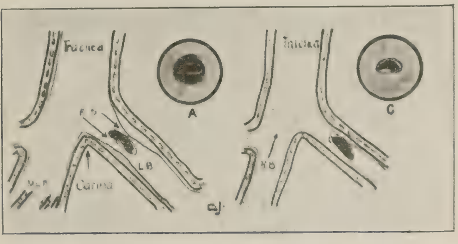


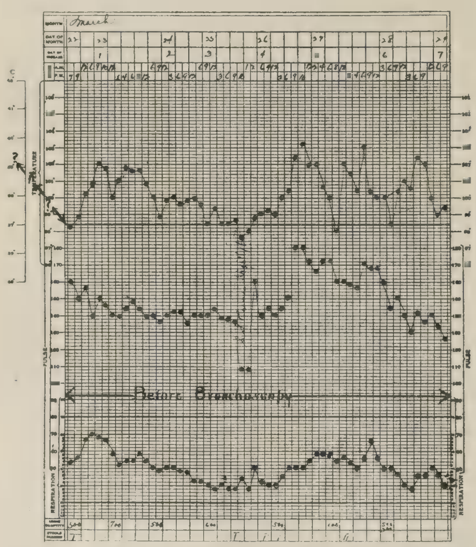
Diagram illustrating the mechanism which enables air to enter a bronchus but not to escape.

4. *Shifting of the Foreign Body.*—This is not very uncommon, and naturally confuses the signs and the diagnosis. The most frequent happening is that the foreign body is forced up into the trachea and remains there, or passes down into the bronchus of the other lung. The swelling of the mucous membrane persists for some days on the side first affected giving signs, while on the other side the foreign body causes changes. An example is as follows:—

Peanut in Bronchus.—A patient, aged 3 years, had been given candy which contained peanuts. She disposed of one piece, but with the second one she suddenly choked and became black in the face. The choking soon ceased, but dyspnœa and wheezing respiration persisted. Three weeks later the child was brought to the clinic with a temperature of 104° F., a pulse-rate of 140, and a respiration-rate of 40. The signs were in the lower right lobe. The other lobes on the right side and the left lung showed harsh breath sounds and an occasional coarse râle. The child was examined several times, and the signs were unchanged on the examination made just before bronchoscopy. On insertion of the bronchoscope by Dr. Jackson the child became very cyanotic. The *right* bronchus was found intensely inflamed and large amounts of pus appeared, but no foreign body could be found. The other side was explored and the peanut found in the *left* main bronchus. Dr. Jackson thought that the shift occurred with the introduction of the bronchoscope, and that this was responsible for the marked cyanosis. The place where the peanut had been on the right side was well marked by the local changes.

5. *The Results of a Previous Bronchoscopy.*—With the great development of bronchoscopy it is natural that some men may practise it who have not had sufficient training. One can imagine a man, who realises that his training is insufficient, perhaps thinking it is his duty to try and remove a foreign body if more skilled operators are a long distance away. Whether this view may be right or wrong, a certain number of patients are seen in whom trauma has resulted from previous bronchoscopy. This may add greatly to the difficulty of diagnosis, and time is usually required for the signs due to the bronchoscopy to subside.

FIG. 8.



Temperature chart from a patient with a peanut in a bronchus. The drop in temperature (upper curve) occurred with a period of drainage. The rapid pulse and respiration rates (middle and lower curves) are marked.

6. The many possible variations in the relative amounts of air and secretion in the affected lung may cause great changes in the signs even from hour to hour. This renders it important to study the patients —if the diagnosis is difficult—for several days with frequent examinations. Special emphasis must be placed on the varying signs. On the one hand this is confusing, but on the other hand it is sometimes very helpful, especially if there is danger of mistaking the condition for pneumonia or empyema.

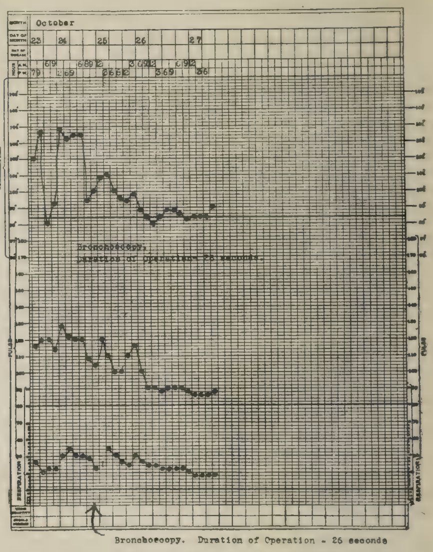
7. *Late Changes.*—These are not peculiar to foreign bodies. If the foreign body remains for a sufficiently long time a purulent process results and may lead to abscess formation. Bronchiectasis and fibroid changes are also natural sequences.

Symptoms.

The immediate symptoms due to the inhalation of the foreign body are very variable, as has been mentioned. There may be none or they are so slight as to escape notice both in adults and children. The following histories illustrate this:—

Atomiser Tip in Bronchus.—A man, aged 58 years, was troubled by cough which continued for some months, due, he thought, to his having "caught cold." He was told that many râles were present on both sides. A diagnosis of tuberculosis was made, although no tubercle bacilli were found. He went south for his health, but did not improve. Finally an X ray study was made, which showed a foreign body in the right lower lobe bronchus. On removal this was found to be the tip of an atomiser. He then remembered that 18 months before he had noted that the tip of his atomiser had been lost. He had no recollection of any disturbance which occurred at the time of aspiration.

FIG. 9.



Illustrating the rapid fall in temperature after removal of a foreign body. Pulse and respiration rates follow suit.

As might be expected, the lack of any history of aspiration is not infrequent in young children. They may not realise that anything worthy of comment has occurred or many hesitate to expose their doings to publicity and perhaps punishment.

Umbrella Tip in Bronchus.—A boy, aged 8 years, was brought with the history that when 2½ years of age he suddenly brought up a mouthful of blood while eating a meal. An attack of fever followed, and the condition was diagnosed as broncho-pneumonia. There were repeated hæmorrhages and continued cough, but it was not until five years later that an X ray study was made and the metallic tip of an umbrella discovered in a bronchus. There was nothing to suggest the time of entrance. In another patient, a boy aged 7 years, there was a history of cough for eight months, but no information could be obtained which gave any clue as to the time of aspiration. Examination showed a collar button in the lower right bronchus.

There is a great difference between the symptoms due to an irritant substance such as a nut and to a metallic structure such as a tack. The features of the former are discussed separately as they have special characteristics. In the majority of cases there is some disturbance at the time of aspiration, but this varies greatly in severity. The patients speak of choking and strangling, and the account in children is often of very severe disturbance accompanied by cyanosis. In many cases the account suggests that the object being in the trachea was responsible for the severity of the manifestations. The history often states that in a short time the symptoms decreased and the patient became comfortable, or there may have been paroxysms of cough for a few days. In some cases there are fever, cough, and rapid respiration, so that a diagnosis of pneumonia or influenza is often made. After this or without it there may be a period without symptoms. This often causes error, as it is supposed that there cannot be any foreign body present without distress. This quiescent period is responsible for many errors, and the frequency of its occurrence deserves special emphasis. Certain of the symptoms may be discussed in detail.

Cough.—This is usually present to some extent, but its occurrence may be irregular; sometimes it is in paroxysms. In small children it is often excited by movements or by crying. If an inflammatory process involves the upper air-passages or there has been trauma from a previous bronchoscopy, the cough may have a croupy character. So much has been learned from the bronchoscopic work of Professor Jackson regarding the factors which excite cough that some discussion of the whole subject is important, especially in the explanation both of its occurrence and of its absence.[3] The cough reflex may be entirely absent; this occurs most often in children and especially in toxic conditions. It is seen sometimes in old people with pneumonia. If an inflammatory process with secretion is present, marked accumulation results if the cough reflex is absent. The mucous membrane of the respiratory tract shows a marked tolerance to the irritation of a metallic foreign body after a few minutes of contact. Cough is excited if a bronchoscope is introduced into the right bronchus, but this subsides in a few minutes, and the tolerance remains until the instrument is brought into contact with new areas. If the bronchoscope is then introduced into the left bronchus and later reintroduced into the right bronchus the tolerance is found to have disappeared and cough is excited as on the first introduction. This explains certain of the clinical phenomena. For example, a foreign body which is fixed causes very little cough as compared with that resulting from a movable substance. In the former case tolerance is quickly established. This explains the frequent quiescent interval noted after the first period of cough following aspiration if the foreign body is not a plant substance.

Soon another factor comes into operation—namely, the reaction set up by the presence of the foreign body. In the case of a pin this may be very slight, but in the majority of cases there is local irritation with the production of secretion. The mechanism of the cough reflex will then be the same as in other conditions in which secretion occurs. There appears to be a difference due to the situation of the foreign body, and it seems that when it is far down in the bronchial distribution it excites less cough than if in one of the main bronchi. In one case a safety-pin remained for two months low down in the lung without exciting cough.

The influence of *secretion* is important. In almost all cases in which the production of pus occurs there is marked cough. It seems that when the foreign body is fixed the resulting cough is excited by the irritation and presence of secretion rather than from the foreign body itself. This is supported also by the fact that in cases in which the foreign body is a vegetable substance, such as a nut, and excites intense inflammation very rapidly cough results very quickly and is frequent in occurrence. The influence of secretion is also shown by the occurrence of cough in patients who have a foreign body in the œsophagus. This occurs with obstructive but not with non-obstructive œsophageal foreign body. In the obstructive cases there is an overflow of material (secretions and food) from the œsophagus into the larynx.

The tolerance of the larynx to the presence of foreign bodies is sometimes marked, and is well shown after intubation. A child aspirated a safety-pin into the larynx where it remained for three weeks. After the coughing and choking at the time of aspiration there was no cough. In two cases a cockle burr was aspirated into the larynx, and after a short period of choking and coughing the patients were free from cough. It may be said that very severe paroxysms of coughing when the foreign body is in a bronchus suggests that it is being moved about. Jackson concludes that there are no areas in the trachea or bronchi which are so specially sensitive as to deserve the designation of cough excitation areas; that tolerance is quickly established in all areas, and that the finer bronchial divisions show less cough production than the larger bronchi. The peripheral areas show no cough reflex unless *possibly* the pleura is irritated by pressure.

Dyspnœa.—This is rarely marked in bronchial cases with a metallic substance unless a main bronchus is blocked, secretions have passed over to the unaffected side, or the swelling of the mucous membrane has produced narrowing on one side and the foreign body has been shifted to the other side. The inflammatory reaction from bodies of an organic nature usually causes marked dyspnœa.

Pain.—This is rare, but in some cases the patient is able to localise the situation of the foreign body very accurately. In other cases they have been quite wrong, and have located the foreign body on the unaffected side of the chest from their sensations.

Fever is almost invariable at some time or other. (Figs. 8 and 9.) In many cases it comes on at intervals lasting for a few days or a few weeks, usually with an increase in cough and expectoration. In such cases the diagnosis of influenza or pneumonia is frequently made. With marked suppuration the fever curve may show wide variations. Slight continued or irregular fever is not uncommon.

ELLA SACHS PLOTZ FOUNDATION.—This Foundation has been established in memory of Ella Sachs Plotz, of New York City, for the promotion of scientific investigation. The income from it is to be used under the following conditions: 1. For the present, researches will be favoured that are directed towards the solution of problems in medicine and surgery or in branches of science bearing on medicine and surgery. 2. As a rule, preference will be given to researches on a single problem or on closely allied problems; it is hoped that investigators in this and in other countries may be found, whose work on similar or related problems may be assisted so that more rapid progress may be made possible. 3. Grants may be used for the purchase of apparatus and supplies that are needed for special investigations, and for the payment of unusual expenses incident to such investigations, including technical assistance, but not for providing apparatus or materials which are ordinarily a part of laboratory equipment. Stipends for the support of investigators will be granted only under exceptional circumstances. The present available annual income is $10,000. Applications for support from this Foundation, accompanied by a full statement of the need for the investigation, the conditions under which it is to be prosecuted, and the way in which the grant would be expended should be forwarded to the Secretary of the Executive Committee, Dr. Francis W. Peabody, Boston City Hospital, Boston, Massachusetts.

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[3] Chevalier Jackson: Cough: Bronchoscopic Observations on the Cough Reflex. Jour. Amer. Med. Assn., 1922, lxxix., 1399.

LONGEVITY OF PARASITIC WORMS:

THE TERM OF LIVING EXISTENCE OF SCHISTOSOMA HÆMATOBIUM IN THE HUMAN BODY.

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LONGEVITY in biology is the term of living existence, without reference to its being a long or a short term or comparatively a long or a short term. The word needs definition because, being one about which dictionaries are not precise, its meaning is ambiguous. In an essay on comparative longevity, published about 1870, Ray Lankester[1] found it necessary to define its uses. Chalmers-Mitchell, in his Notes on the Theory of Longevity,[2] accepts Ray Lankester's definitions, and we cannot do better than accept them also.

Longevity: Normal and Potential.

Ray Lankester refers to "specific longevity" as the average span of life of the species, and "potential longevity" as the possible length of life of the individual. Specific longevity is the longevity of the species, the length of time a living being may expect to survive under natural conditions—the "expectation of life at birth." This is a problem of mathematics rather than physiology, is largely determined by accidents and external conditions, and does not interest us here. Potential longevity, on the other hand, depends on the inherent *vitality* of the individual. Accidents, diseases, and external conditions have no relation to it. It is said to be *normal* or *absolute*. If all untoward external conditions, diseases, and accidents could be eliminated, the animal surviving as long as his store of vitality lasts, no longer and no shorter, we should have absolute potential longevity, and the biologist could study longevity without any qualifications.

Absolute potential longevity is rarely if ever attained; we must therefore examine longevity as we find it, normal potential longevity, length of life under normal conditions. Although the subject of potential longevity has been much studied by philosophers and biologists, no great distance has been traversed, possibly because investigations have been limited in the main to man and the higher animals. The question as to why one animal lives longer than another is still without a satisfactory answer. Is there in truth any causative relation between high longevity and complex structure or mass? Has personal energy or generative expenditure anything whatever to do with potential longevity? Why is the distribution of "vitality" apparently so arbitrary?

Practically speaking, little is known of the potential longevity of the higher animals[3]; of that of wild animals nothing. Of potential longevity we know little concerning domesticated animals, and nothing concerning the uncivilised races of man, and we have only a life-insurance office knowledge concerning civilised man; accidental influences obscure the path of investigation, making progress by scientific methods impossible. Under such circumstances longevity can be dealt with mathematically but not biologically; in other words, specific longevity may be determined in the case of some of the higher animals, but it is difficult, if not impossible, to determine potential longevity.

More precise knowledge is obtainable of the potential longevity of some of the lower forms of life, and here the problem seems to be simpler. For instance, the plasmodium of malaria has a well-known term of existence in the human circulation[4] and the longevity of some of the parasitic trematode worms have been studied. Thus there appears a prospect of increasing the slender store of knowledge by the study of tissue and blood parasites in connexion with longevity, especially in such cases where external influences are reduced to a minimum—as, for instance, in fluke parasites of animals, where normal and absolute longevity approach each other more nearly than in other living things.

The Bilharzia Worm.

The potential longevity of the bilharzia worm in the human body is well worth attention. It is a tissue and blood parasite, and as such little subject to changes in environment, surroundings, or external conditions. G. M. Vevers,[5] in a review of the entozoa collected from animals which died in the Zoological Gardens of London during eight months in 1919, reporting a case of *Gastrodiscus ægyptiacus*, the trematode of equines in Africa, draws attention to the small amount of information we possess on the length of life of parasites of various groups in their hosts. (*Gastrodiscus ægyptiacus* is a species of parasite not altogether unrelated to bilharzia.) Dr. Vevers found this parasite in a Grevy's zebra which had been in the Gardens for six years. As it does not breed in the host, but requires an intermediary host to complete the life-cycle (*Cleopatra bulimoides*, a fresh-water snail), and as an intermediary host has not yet been reported in this country, the parasite must have been six years old at least at the death of the zebra. Further, as the zebra was in Hagenbeck's collection at Hamburg for three years previously we may fairly certainly assume that the potential longevity of *Gastrodiscus ægyptiacus* is at least nine years—probably longer. This is a long time for a parasite to live in the body of the host, and, as Dr. Vevers points out, the more remarkable in that the parasite lived in the intestines, where the vicissitudes of existence are greater and more numerous than in the blood or tissues. But remarkable as is this evidence of great longevity in a small living thing, it is not so remarkable as the long span of life of the bilharzia worm.

During the South African war many British soldiers contracted bilharzia disease. In 1920, 18 years after, many of the survivors, who had not been out of England and so could not have been reinfected, were passing live ova in the urine; in other words, some of the worms which the men had acquired in South Africa in 1902 were alive in 1920. The potential longevity of the bilharzia worm must therefore be 18 years. It is in point of fact longer. A well-known zoologist and doctor of medicine, living in England, contracted bilharzia in 1878, when he was 28 years of age, between the Limpopo and Zambesi rivers, whilst on a naturalist's expedition. He was probably infected in the Northern Transvaal on the borders of the Kala Hari river. He read a thesis on Endemic Hæmaturia in 1881, for which he obtained his M.D. degree, and became an acknowledged authority on bilharzia disease. Twenty-eight years after his return to England he was passing ova in the urine, which hatched out. He identified the ova himself under the microscope; the observation was confirmed by a well-known surgeon at Cambridge, who had often seen bilharzia ova, who made a note of the fact and informed the writer of this article. The patient had not been out of Europe in the interval, and had run no risk of reinfection by the parasite. How many years after the 28 he continued passing live ova I do not know; he did not bother about a disease which he had had for so long. I saw him in 1920 (42 years after infection), and found no ova in the specimen of urine which I examined, so 28 years must stand for the time being as the longest life of the bilharzia worm yet recorded. Possibly the potential longevity of the worm is longer; my friend wrote me in 1923 that he was of opinion that some of the worms still survived (45 years after infection) for he was still bothered by urinary irritability every year in August and September, which he humorously regarded as an indication that " Bill " was, as usual, taking the family to the seaside for the summer holiday.

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[1] On Comparative Longevity in Man and the Lower Animals, 1870.

[2] Proc. Zool. Soc., 1911, i., 430.

[3] Ray Lankester's expression in 1870 was "profound ignorance."

[4] The longevity of the plasmodium of malaria may not be so simple as appears from this statement; it apparently may assume a spore form and lie dormant in the body for a long period.

[5] Proc. Zool. Soc., 1920, Pt. III., 805.

With regard to the general question of the longevity of bilharzia worms, bilharzia, practically speaking, is always a multiple infection. We have counted at Khartoum as many as 450 worms in the portal vein of a case post mortem—each worm is a separate individual infection. There may be many strains of worms in the same human host, each strain having its own potential longevity. Some of the worms, no doubt, die each year, it being common experience, if no complications intervene, that symptoms improve with time. The weaker strains die first, and those with higher potential longevity live longer, it may be over 20 years, while a few live longer still.

The reason of the variability in the longevity of individual worms is an interesting question. Is it that different strains have arrived at various stages in their endeavour to adapt themselves to the span of life of the host? A tissue and blood parasite, subject to no adverse external influences to speak of, with no great changes in environment, no anxiety about food, &c., the only accident to which it is liable being the death of the host, would be more likely than another to live out its full span of life, fulfilling its destiny, and adapting itself to the span of life of its host more rapidly on this account. The longer-lived worms of the brood endowing their progeny with higher potential longevity than the shorter-lived, one might suppose the longevity to increase as generation succeeded generation. Bilharzia is an ancient disease in Egypt; it possibly originated there. It was prevalent about 1000 B.C.,[6] and the early papyri (Ebers) record a remedy for hæmaturia.

Relation of Longevity in Parasite and Host.

The worm having probably had time to adapt itself to the life-span of the host, one might expect parasites of a host with a shorter potential longevity than man to have a shorter potential activity than bilharzia worms. In the case of trematodes, cestodes, and nematodes[7] with intermediate hosts, when the patient has been moved from the focus of infection to a non-infected locality and the danger of reinfection eliminated, the longevity of the parasite can be studied with a fair amount of certainty, as we have an approximate date of infection and external harmful influences are reduced to a minimum. If certain parasites have potential longevity corresponding to the average longevity of the host, we might expect to find that the longevity of the bilharzia worm infecting cattle was of shorter duration than that infecting human beings.

It has been suggested to me that some of the diptera lay many eggs and have short longevity, and that parrots lay two eggs in about three years and have high longevity. Let these facts be admitted. It is not clear that the diptera die early because they lay many eggs, or that the parrot would live a shorter time if she laid more eggs. Bilharzia lays many eggs and has long potential longevity. If bilharzia did not lay many eggs the species would not be carried on—of the total number of miracidia hatched few have the chance to reach the intermediate host—but, on the other hand, one single miracidium piercing a snail may give rise to many cercariæ.

It seems to me that no conclusion can be drawn from these facts. There is a stranger thing to relate—namely, that the cercaria, the larval form of bilharzia, has a maximum longevity of about 28 hours as a free swimming entity, but when it pierces and penetrates the human skin it discards its tail and develops into the bilharzia adult worm having a potential longevity of 28 years. Can this be explained in general terms?

Conclusion.

To conclude, it seems clear that bilharzia worms have a long potential longevity, and do not conform to the conditions which Ray Lankester has laid down as favouring longevity. Their *individuation* is not high, their structure is not complex or their bulk large. They display considerable energy throughout their (frequently) long life, traversing the portal veins between the liver and bladder (or rectum). Their generative energy is great, commencing early and continuing through life; they deposit enormous numbers of eggs.

It is probable that the study of the life-history of living things shorn of most of the obscuring and overwhelming external conditions of environment will bring us nearer to fundamental principles which apply to more complex and more developed organisms and lead to a revision of our present conclusions regarding potential longevity.

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[6] Ruffer, M. Armand: Note on the Presence of Bilharzia Hæmatobia in Egyptian Mummies of the Twentieth Dynasty (1250–1000 B.C.), Brit. Med. Jour., 1910.

[7] In the Ministry of Pensions tropical clinic the following case recently occurred showing the longevity of filaria: An Englishman was infected with *Filaria loa loa* in West Africa. He was placed under observation in 1918 and his peripheral blood was at intervals examined, but it was not until 1922 (6½ years after he first noted the swellings (Calabar)) that embryos occurred in the blood-stream. As *Filaria loa loa* requires an intermediary host to carry on the species not found in England, and as the man had not been out of England since 1915 he could not have been reinfected, we must conclude that the filaria worm producing the embryos arrived at maturity after 6½ years. It will be interesting to know what the potential longevity of *Filaria loa loa* is. The infection has already existed for nine years (1924) in the case quoted.

IDIOSYNCRASY TO ADRENALIN,

WITH REFERENCE TO ITS EMPLOYMENT WITH LOCAL ANÆSTHETICS AND IN GOETSCH'S TEST FOR HYPERTHYROIDISM.*

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AT the joint meeting of various Sections of the Royal Society of Medicine on cocaine substitutes, as reported in THE LANCET of Dec. 15th, 1923, adrenalin, which is often given with drugs of this class, received little notice when toxic effects were being reviewed. Adrenalin is not a cocaine substitute, and it was not, strictly speaking, under discussion. It seems, therefore, a suitable time to consider its toxic effects.

The Employment of Adrenalin with Local Anæsthetics.

The following instance of the occurrence of disquieting symptoms after the injection of novocaine and adrenalin for the extraction of teeth has recently come to my notice. Incidentally, the patient gave a positive reaction to Goetsch's test for hyperthyroidism, though the dentist did not have this test in view when making the injection.

A married woman of average nervous stability, aged 38, had novocaine and suprarenin injected into the gum by Mr. S. D. Corbett for the extraction of two lower incisor teeth on July 2nd, 1923, and the following symptoms appeared almost immediately after the injection: limpness and chilliness, succeeded by mental agitation, severe palpitation, rapid panting breathing, flushing of the face, and tremor of the arms and legs. The pulse was feeble. There was no nausea and the brain remained clear. A few minutes later, the severity of the symptoms having abated, the teeth were removed. On getting up there was difficulty in standing. Recovery was uneventful, and the patient was in her usual health the following morning. The doses of the drugs injected were 0·03 g. (½ gr.) of a 2¼ per cent. solution of novocaine and 0·00003 g. of suprarenin—an amount equal to ½ a minim of a 1 in 1000 solution of adrenalin chloride, at a strength of 1 part in 40,000.

Dixon[1] states that suprarenin, which is synthetic adrenalin, has only half the toxicity of the natural variety, so the appearance of toxic symptoms in this case, following, as they did, so small a dose, is the more striking. On inquiry, it transpired that the patient had experienced similar, though less marked, symptoms several times previously in similar circumstances. Their greater severity on this occasion may be attributed to the fact that she was at a lower level of health at the time.

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* Based upon a paper read before the Royal Society of Medicine (Section of Therapeutics and Pharmacology) on April 8th, 1924.

The symptoms might be explained on the assumption that the drug was injected into a vein—intravenous injection of adrenalin being 40 times more dangerous than subcutaneous [2]—but this contingency is excluded here, as the patient had had similar experiences before. When troubles are recorded in the literature in connexion with the use of novocaine and adrenalin for tooth extraction, one cannot always be sure that neurosis, or some other cause, has not played a leading part in their production. On the other hand, patients actually presenting mild toxic effects have, no doubt, been diagnosed as showing manifestations of neurosis. I may, however, draw attention to a case, recorded by Parfitt,[3] in which novocaine and adrenalin were injected for tooth extraction, which presented symptoms strikingly resembling those of the case detailed above; and to another, published by Pedley,[4] in which death occurred in similar circumstances.

But grave toxic symptoms following the use of small doses of adrenalin in dental practice are not common, for Mr. F. N. Doubleday, at the meeting of the Royal Society of Medicine above referred to, stated that he had used novocaine and adrenalin in hospital practice for 16 years without serious ill-effects.† Nevertheless, it is recognised that adrenalin is liable to cause disquieting symptoms, even in small doses, unless used in dilute solutions, for Blomfield [5] writes: "Adrenalin, if injected in too strong solution, easily causes a feeling of oppression in the chest and palpitation." Blomfield [5] further states that "the local ischæmia produced by adrenalin follows the use of solutions as weak as 1 in 200,000." In view, therefore, of the existence of individuals with an idiosyncrasy to adrenalin, it would appear that dentists might, without sacrificing efficiency, use a solution of a strength of 1 in 100,000 to 1 in 200,000 instead of one of 1 in 20,000 to 1 in 40,000. At all events, it would seem to be desirable for them to inject a small and dilute dose when operating on a patient for the first time, and, if an idiosyncrasy is found to exist, to advise a general anæsthetic on future occasions.

To turn to less minute doses, A. F. Hertz[6] gave himself a subcutaneous injection of 3 minims of a 1 in 1000 solution of adrenalin, and describes the results as follows: "I felt extremely ill for some minutes, my hands shook so much that I could hardly put the syringe away, and my pulse became very rapid." And Braun[7] gave himself a subcutaneous injection of 7·5 minims of a 1 in 1000 solution of suprarenin with the following results: A sense of oppression in the chest came on in five minutes, and the breathing became deeper and more rapid. Palpitation followed, the pulse increasing from 64 to 94 per minute, and he had to lie down. The symptoms lasted for one and a half minutes.

With still larger doses, such as those used in surgical practice, the danger of toxic symptoms is proportionately greater, and I would suggest that it is desirable to test the susceptibility of the patient by giving a preliminary dose, smaller than the one which it is intended to use at the operation, in all cases in which it is proposed to employ adrenalin in conjunction with a local anæsthetic. This remark has particular cogency in connexion with operations which are not essential. In conditions in which hyperthyroidism is known to exist, such as Graves's disease, even of mild grade, adrenalin would appear to be contra-indicated.

I may here cite particulars of a fatality which occurred at a London hospital after the injection of adrenalin in the case of a patient with Graves's disease, on whom it was intended to operate. The particulars were related to me by one of the authorities concerned, and are transcribed from notes made at the time.

> The patient was a woman of 28, with slight symptoms of Graves's disease and a goitre of considerable size. She was not nervous or apprehensive, the reason for the operation being her desire to have the tumour removed to improve her personal appearance. At 9.15 A.M. omnopon, gr. $\frac{1}{3}$, scopolamine, gr. 1/100 and atropine, gr. 1/120 were injected, but took only slight effect, the patient not becoming drowsy. At 10.15, 65 c.cm. of a $\frac{1}{3}$ per cent. novocaine solution, and a little more than 2 c.cm. (37 minims) of a 1 in 1000 adrenalin chloride solution were injected into and under the skin of the neck, there being no evidence of the piercing of a vein. No ill-effects were noticed till 10.27, when she vomited. At 10.30 the face had become blue, the corneæ insensitive, the pupils dilated, and the breath gasping, and the pulse was only just palpable. Shortly afterwards respiration ceased, and the pulse became imperceptible. There was no response to oxygen insufflation, caffeine injection, or artificial respiration; and only a flutter was elicited by the hand when the heart was massaged through an abdominal incision.

This case shows the sledge-hammer effect of a large dose of adrenalin, when hyperthyroidism is present, and it does not, therefore, present the typical reaction associated with small doses.

The question may be asked: could not the symptoms manifested in the various cases mentioned be produced by the novocaine and not by the adrenalin? The two following considerations are opposed to this view: (1) The similarity of the picture to that following Hertz's and Braun's experiments on their own persons with adrenalin—to which attention has already been called—and also to that of a positive reaction to Goetsch's test, to be shortly described. (2) The low toxicity of novocaine. This drug has been found experimentally to be the least toxic of local anæsthetics.[8] Braun states that he has never noticed any disturbance resulting from a subcutaneous injection of a 2 per cent. solution of novocaine, and that he has been in the habit of using between 100 and 200 c.cm. of a 0·5 per cent. solution, together with small quantities of a 1 per cent. solution, repeatedly giving as much as 250 c.cm. (1·25 g.), and he quotes instances of large doses injected by others. Though he mentions several cases in which death followed the use of novocaine, he considers that other causes would account more naturally for the event in each instance. The fact that such large quantities of novocaine can be employed with impunity, if a dilute solution is used, suggests that, in addition to the initial one, further injections might be made as an operation proceeds. If this is so, the localising effect of adrenalin may not be so necessary as has been thought, and it may be possible largely to dispense with the drug for this purpose.

Certain observations on the blood pressure of anæsthetised animals by Sternberg[9] also tend to discourage the use of adrenalin in association with novocaine. These observations show that the action of adrenalin‡ is increased, as compared with its action on animals used as controls, as a result of giving even small doses of cocaine, alypin, or novocaine. The sensitising effect of novocaine was, however, much more transient than that of cocaine or alypin.

Goetsch's Test.

Goetsch's test, which is used to differentiate hyperthyroidism from certain functional nervous disorders and from early tuberculosis, may be described as follows: 7·5 minims of a 1 in 1000 solution of adrenalin chloride are injected subcutaneously. The blood pressure and pulse-rate are taken before the injection, and every few minutes after it, for a period of one and a half hours. A positive result consists in a rise of at least ten points in both blood pressure and pulse-rate during the first quarter of an hour, together with heart consciousness, asthenia, a feeling of dread, tremor, pallor, and flushing, and some sweating. Goetsch[10] was led to elaborate this test after collating the results of certain experiments on animals by various workers, from which he concluded that an increased sensitiveness to adrenalin, on the part of the sympathetic nervous system, exists in the presence of an increased amount of thyroid secretion in an organism; and that, by virtue of this sensitising action on the sympathetic system, a sudden increase of adrenalin in the circulating blood should call forth active responses throughout that system. He considers that the most frequent cause of this condition of increased activity of the sympathetic is hyperthyroidism. Whatever the theoretical basis may be, there is little doubt that adrenalin produces the results claimed in cases of hyperthyroidism. Goetsch himself obtained a positive response in cases of Graves's disease and in adenoma of the thyroid, and McBryer[11] has published a series of observations pointing in the same direction.

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† He uses 0·02 g. novocaine and 0·0005 g. adrenalin in 1 c.cm.—i.e., at a strength of 2 per cent. and 1 in 20,000 respectively.

‡ Sternberg injected the adrenalin intravenously, and at a strength varying between 1 in 200,000 and 1 in 1,000,000.

Goetsch writes: "In no case were dangerous symptoms observed after the dose of adrenalin which I used," and he goes on to say that it is not until twice the dose is reached that mild symptoms are produced in normal individuals. In view of the various experiences narrated above, it is difficult to avoid the impression that Goetsch and certain other writers on the subject have been fortunate. Although grave symptoms may be rare, one cannot be sure how near a case, apparently presenting mild toxic effects, may be to the borderline dividing the harmless from the dangerous. But even if grave symptoms could be excluded, the manifestations constituting a positive reaction to the test, though not in themselves necessarily serious, might produce, in the case of nervous patients, psychological effects causing undesirable results of a permanent character. McBryer performed the test on a series of individuals. The series was made up of normal and tuberculous persons, some of the latter being known to have hyperthyroidism. In every case of this series tremor and nervousness were produced or increased, and in those which were known to have hyperthyroidism the pulse became "irregular, unequal, and varied in volume." Probably few physicians would agree to their patients being subjected to the test if they were aware that it is liable to produce such results as these, unless the diagnosis was impossible by other means.

As to the rôle of Goetsch's test in differentiating between hyperthyroidism and early tuberculosis there are other methods available for the purpose, and the test may therefore be regarded as a luxury. The only tuberculous cases in which, in my experience, the differential diagnosis has been doubtful have been those with acute pulmonary tuberculosis in an early stage, when the progressive nature of the lesion has rapidly decided the point. Owing to lack of experience in the diagnosis between hyperthyroidism and "certain functional nervous disorders," I am unable to give an opinion as to whether the advantages to be expected from the test in this type of case are commensurate with the inconveniences and risks entailed.

Conclusions.

That some people show toxic effects, as a result of receiving a small dose of adrenalin, and that these effects are increased if certain local anæsthetics are given simultaneously.

That toxic manifestations from adrenalin might be eliminated in dental practice if dentists were to avoid stronger solutions of this drug than 1 in 100,000.

That surgeons might escape such manifestations by giving a preliminary injection of a smaller dose of adrenalin than that which it is proposed to employ at the operation; and, in the event of an idiosyncrasy to adrenalin being found to be present, by employing a general anæsthetic.

That it is preferable to use synthetic adrenalin rather than the natural product.

That the use of adrenalin is contra-indicated when operating on patients with Graves's disease.

That the practicability of using large quantities of a dilute solution of novocaine may render it possible to discontinue the use of adrenalin with this local anæsthetic.

That Goetsch's test should only be employed when the diagnosis cannot be established by other means; and that, if it is decided to make the test, a smaller dose should be given first, as suggested in the case of projected surgical operations.

(*Continued at foot of next column.*)

Idiosyncrasy to Adrenalin: References.

(*Continued from previous column.*)

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MEASUREMENT OF ULTRA-VIOLET LIGHT

BY MEANS OF AN ACETONE METHYLENE-BLUE SOLUTION.

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The first essential in the proper use—as a means of treatment—of sun radiation or that of artificial sources is an accurate measurement of dosage. The dose is the product of intensity and duration. It has been shown that it is the ultra-violet radiation which is active in producing biological action, such as erythema followed by pigmentation of the skin, prevention of rickets in animals and children on a deficiency diet, and cure of lupus and other tuberculous lesions. Infra-red rays by themselves have no lethal action other than that of heat, as is shown by the fact that if infusoria, microbes, or the human skin be kept cool—e.g., by irrigation—infra-red rays have no effect. Both these and visible rays, in so far as they heat the living cells, quicken the lethal action of ultra-violet rays.

While the biological action of the ultra-violet rays is thus quickened by coincident infra-red and white light, there is some evidence that, at any rate in the case of the mercury-vapour lamp, it is somewhat delayed in cool conditions by a coincident pencil of red-yellow rays. The chief artificial sources of ultra-violet rays are the carbon arc and the mercury-vapour lamp. Metal cores are introduced into a carbon pole to increase the ultra-violet radiation and biological activity of the arc. Tungsten has been used, but we find the cheaper aluminium cores to be more active. The spectrum of tungsten is credited with no lines shorter than 3965 Angström units, while that of aluminium extends to 2263 and iron to 2332. That of iron is particularly rich in lines about 3000, which is the length of ray most active in producing erythema of the skin. The ordinary "white light" carbon is itself not far behind the metal-cored ones, and is quite active enough for general use. The carbon arc is rich in visible and heat rays, but not so rich proportionately in visible rays as the high sun. The mercury-vapour lamp (M.V.L.) is richer in ultra-violet rays, and gives off much less heat and less visible rays than the carbon arc. In the Cooper Hewit M.V.L. the arc is made in a vacuum, and the intensity of this lamp falls off as the vacuum becomes lessened with time. In the Kelvin, Bottomley, and Baird M.V.L. there is no vacuum, and the same disadvantage does not occur, but deterioration takes place slowly. It is necessary that the intensity of the M.V.L. should be tested from time to time, and that of the carbon arc measured before treatment is given. As the intensity varies as the square of the distance from the source, very different dosages may be given, and either uselessly small, or harmfully large, reactions produced if the dosage is not measured beforehand.

The sun varies enormously with its height in the sky and with clarity of atmosphere, amount of cloud, &c. A gauge is required both to test the strength of the sun before dosage and to measure the dosage given day by day. Seeking for a gauge of ultra-violet rays, based on biological action, we first began by trying the bleaching of various solutions of protein and methylene-blue, and then turned to a solution of acetone methylene-blue as simpler and cleaner and having a suitable absorptive power.

A solution of acetone in water is decomposed by ultra-violet light with the formation of acetic and formic acids and other substances. We first used the increase in pH of a watery solution of acetone exposed to a source of ultra-violet light as a measure of the intensity of the light, and in the laboratory this gives satisfactory results. It needs, however, some care in measuring quantities of solution and indicators used, and is not simple enough for general use. The decomposition of aqueous acetone by light is partly an oxidation process, and it was thought likely that reduction processes were taking place at the same time, and that these might be measured by means of the reduction of methylene-blue. This proved to be the case, the bleaching of the methylene-blue being proportionate to the time of exposure. Methylene-blue evidently acts as a hydrogen receptor in the complex oxidation and reduction processes going on in the mixture. Mr. F. Smiles investigated for us the absorption of the spectrum of the iron arc by a 30 per cent. solution of acetone in a quartz container in a layer 3 mm. thick, and by this, and by our acetone methylene-blue solution in like thickness, all rays shorter than 3600 A.u. were absorbed. The shortest visible rays are about 4000 A.u., and the shortest ultra-violet which penetrate air about 2000 A.u. The standard acetone methylene-blue is made up from a 0·1 per cent. solution of Paulenc Fréres methylene-blue; 5·8 c.cm. of this is added to 30 c.cm. of acetone and made up to 100 c.cm. with water; this gives a standard labelled (10).

Older Methods.

The older methods[1] which have been employed are (1) the iodine method of Bering-Meyer[2]; (2) the Eder photometer; (3) the photo-electric cell of Elster and Geitel used by Dorno; (4) the chron-actinometer of Bordier; (5) the silver-citrate method of Victor Henri; (6) the aktinimeter of Fürstenaus. The Bering-Meyer method depends on the setting free of iodine out of an acid solution of potassium iodide. The iodine set free by radiation is found by titration with a solution of sodium thio-sulphate, or determined colorimetrically.

Keller[3] has modified the Bering-Meyer method by mixing solutions of sodium thio-sulphate, acid potassium iodide and starch, and finding when a blue colour just begins to appear. He uses a mixture of 25 c.cm. of 1 per cent. potassium iodide solution and 25 c.cm. 5·3 per cent. sulphuric acid solution and starch, and 1 c.cm. of 1/400 n. sodium thio-sulphate solution, and using two mercury-vapour lamps, gets good agreement between the reading of this gauge and the amount of erythema of the skin produced by either lamp. One disadvantage of this method is the instability of the solution. The reaction also comes off under a glass screen and is a measure, not of ultra-violet rays, but of these and visible rays.

The Eder[4] photometer is one with a wedge of gelatine of increasing greyness with a scale printed beneath it. Sensitive paper of a standard make is placed beneath the wedge in a frame and exposure of the wedge made beneath a suitable roughened glass which diffuses the light and prevents reflection (Dorno). The extent of the scale printed off on the paper is read. This is a measure of shorter visible and ultra-violet rays. In the Bordier actinometer[5] there is a scale of coloured papers with which is compared a piece of blotting paper first dipped in 20 per cent. potassium ferrocyanide and then exposed to light. We have tested this method under quartz and under glass screens. That under quartz colours the quicker, but the reaction is very slow—e.g., exposed to 25 amp. arc, slight coloration occurred in 90 minutes—while an erythema of the skin followed a 15 minutes' exposure, and the acetone methylene was bleached 1·0 on our scale by an exposure of one hour.

The aktinimeter of Fürstenaus[6] depends on the increase of electrical conductivity of selenium on exposure to light. Victor Henri[7] investigated the following methods for gauging ultra-violet:—

(1) Dissociation of pure and dry HCl.

(2) Decomposition of H_2O_2 in pure H_2O. This is made ten times slower by a glass screen 1 mm. thick in front of the M.V.L., the glass cutting off the shorter ultra-violet rays.

(3) Decomposition of cane sugar and increase of H-ion concentration measured by the physical method. The glass screen slows this 15 to 20 times.

(4) Decomposition of KI in the presence of H_2SO_4. The glass screen slows this 4 to 5 times.

(5) Decomposition of paper moistened with silver citrate. The glass screen slows this 8 times.

(6) Sterilisation of *B. coli* emulsion, 100 c.cm. in a porcelain capsule 6 cm. in diameter placed 20 cm. from M.V.L. The glass screen slows the sterilisation 1000 to 2000 times.

We find that the silver citrate paper exposed to the 25 amp. arc blackens almost as quickly under glass as under quartz. It measures visible and ultra-violet rays. The rays which have the most active biological action on the skin are the middle ultra-violet ones, those at and just on either side of 3000 A.u.[8] These are the shortest rays present in the high sun on clear days, which particularly produce sunburn and pigmentation. Longer ultra-violet rays of equal intensity do not have so great a biological action, but these act on the skin when sufficiently intense in arc or high sun. Shorter ultra-violet rays do not penetrate to the deeper cells of the epidermis, and so while very powerful in killing unicellular organisms into which they penetrate, have little or no action on the skin. Comparing the bleaching of acetone methylene-blue with the action on infusoria in quartz tubes and on the human skin we find a general agreement. In the case of the M.V.L. it takes twice as long to bleach our standard acetone methylene-blue solution one point in our scale as to kill infusoria, or to produce an erythema in the skin equal, on the Lovibond tintometer scale of coloured glasses for skins, to 1·0 yellow plus 1·5 red. In the case of the carbon arc longer ultra-violet and the heating effect of infra-red and visible rays so increase the biological action of the middle ultra-violet rays that the bleaching time for acetone methylene-blue one point in the scale becomes four times as long as that of the above biological reactions. In the case of the autumn and winter sun the bleaching time appears to be twice as long as that for producing the biological reactions; we have not yet had opportunity of investigating the high spring and summer sun.

Details of Method.

Preparation of Standard Acetone Methylene-blue Solution and Standard Quartz Tube.—Take two parts of the standard methylene-blue solution and add one part of acetone and mix. This is the solution used for filling the standard quartz tube. The mixed solution very gradually fades and must be kept in a stoppered bottle in a cool dark place. The standard quartz tube is one with internal diameter of 3 mm.

Instructions.—Fill quartz tube to within ¼ in. of top and close tube with rubber cap, place it against the standard tubes and determine its strength, and then expose to sun or source of radiant energy. By determining the strength of tint before exposure errors due to fading or refractive power of the quartz tube are avoided.

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[1] Keller: Strahlentherapie, 16, 1923.

[2] Strahlentherapie, 1, 1912.

[3] Strahlentherapie, 16, 1923.

[4] Strahlentherapie, 10, 1920.

[5] Supplied by Cooper Hewit, Ltd.

[6] Strahlentherapie, 12, 1921.

[7] Compt. Rend., Acad. Sci., 1911, cliii., 265.

[8] Hausser and Vahle: Strahlentherapie, 13, 1923.

Exposure.—The tube is exposed in an open space that is not shaded in any way from the sun, and is best placed horizontal and with the length of the tube facing zenith.

Time.—In winter, in Britain, the tube can be exposed from 9 A.M. to 9 A.M., and the reduction for the whole day determined. In spring and summer on sunny days the time of exposure may have to be shorter, from, say, 10 to 4, the time during which heliotherapy goes on. In the Alps, where cool early morning hours and less powerful sun are used for treatment, the intensity in these hours would be measured. At the end of the exposure compare the colour in the quartz tube with the colour of the six standard tubes. The standard tubes are marked 3, 4, 5, 6, 7, 8, 9, and are placed in a suitable frame for comparison.[9] If by any chance the sun is so strong as to completely bleach the acetone methylene-blue solution, then the time of exposure must be shortened.

When comparing the exposed tube with the standards hold the tubes at an angle of 45 degrees against the white paper background. Each standard tube is sealed up after the introduction of the watery solution of methylene-blue, which for tropical countries is suitably "buffered" with phosphate salt so as to prevent any alteration of alkalinity and colour of the solution through the prolonged contact with glass in warm atmospheres.[10] After filling the quartz tube, it is advisable to polish it on the outside with a clean piece of cotton—i.e., a soft handkerchief. Any grease or dirt on the outside will stop the ultra-violet rays from penetrating into the solution.

On a clear day the blue sky reflects and scatters much ultra-violet light; white clouds also give these rays. The total ultra-violet from the blue sky is greater than that from the high sun, and much greater than that from the low sun (Dorno). On clear days the sun and sky together produce the result. On cloudy days the intensity of the ultra-violet rays from the sky are measured. Notes of the conditions at the time of exposure are useful: the height of the sun above the horizon, clear or cloudy sky, &c., temperature of air, black fur temperature, and cooling power determined by the kata-thermometer.

In measuring the intensity of lamps the quartz tube is placed vertically—i.e., at right angles to the lamp—and on the same level as it. In measuring the treatment of any particular case, the quartz tube can be placed at the same distance from the lamp as the body, and exposed for the same time as the patient. A rise in temperature of 10° C., say from 15° to 25° C., accelerates the bleaching and makes the reading about 0·6 too high. A correction can be made then for temperature, but as warmth also accelerates the action of ultra-violet rays on the skin so far as concerns treatment, this is unnecessary.

Examples of Results.

Commander Dudding, of the *Hood*, wrote: "I got no reading from my quartz tubes daily exposure two hours (1200 to 1400) until we got to the Cape, lat. 25° S., 12° E. When I got '6' at the same time, men's arms and legs showed red sunburn for the first time." Off Sierra Leone the climate was hot, muggy, uncomfortable—dry bulb 81 and wet 81, dry kata-thermometer 2 and wet 13, but neither sunburn nor bleaching of the blue occurred.

At a distance of 2 feet from a 25 amp. carbon arc the acetone-blue solution was bleached 1 degree in the scale in just about one hour. The Kelvin, Bottomley, and Baird mercury-vapour lamp produced the same change in about 30 minutes at 1½ feet. A 15 minutes' exposure of the body to either lamp produced an erythema of that moderate intensity indicated by the Lovibond tintometer as given above.

Exposing the quartz tube from 9 A.M. to 9 A.M. on days in January (1924) at Hampstead, the bleaching is less than 0·5 on cloudy days, 1½ on fine days, and 2½ on an all-sunny day. At Peppard Common Sanatorium, Oxon (Dr. P. Tozer, observer), the bleaching on some days may be greater by 50–100 per cent. than that at Hampstead, owing to the absence of smoke pollution there.

MASSIVE DOSES OF DIGITALIS IN AURICULAR FIBRILLATION WITHOUT HEART FAILURE.

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FOR some years digitalis has been administered in larger doses than was customary before Sir James Mackenzie's observations on its use in auricular fibrillation. But with these larger doses of 1 to 1½ drachms of the tincture a day there remains the disadvantage that beneficial effects are not demonstrable until after the third day of administration. In 1916 Eggleston proposed to use a dosage far in excess of that indicated in the British Pharmacopœia, and to give three large doses at six-hourly intervals, and then no more for a time.[1] He claimed to be within the limits of safety in cases where there are no contra-indications to a full digitalis effect, and at the same time to obtain this effect much more rapidly than by the current method of administering this drug. Since the original communication of Eggleston several papers have appeared on this subject, and these have recently been reviewed by him.[2] In this country Eggleston's method has been advocated by Prof. F. R. Fraser,[3] who used it in cases of severe heart failure.

In the following observations the effect of large doses of digitalis has been studied with a view to obtaining information of its pharmacological effect upon the heart-rate, the excretion of urine, and the production of vomiting in cases of auricular fibrillation without obvious failure. The patients were under the care of Dr. John Parkinson in the cardiac wards of the Ministry of Pensions Hospital, Orpington. They were middle-aged males with mitral stenosis and auricular fibrillation. All were dyspnœic on exertion, and some also complained of pains about the left breast. None were actually in a state of failure at the time of observation; they were able to walk about without distress, there was no dyspnœa when at rest, no œdema of the feet, and no enlargement of the liver. Some gave a history of occasional and slight swelling of the feet, and two of them had slight enlargement of the liver on admission.

Method of Observation.

If the patient was under the influence of digitalis on admission, he remained without medicine for at least 14 days. At the end of this period his pulse was usually smaller and more rapid. He was then confined to bed, and the apex-beat was repeatedly counted with stethoscope and charted. The urine was measured six-hourly, and the patient was observed in this way for three to four days before any drug was administered. On the morning of the day of administration he was again examined, and the absence of signs of failure confirmed. One or one and a half drachms of a standardised tincture of digitalis was then administered; six hours later the second dose—1 drachm—was given, and six hours later still the third and last dose, another drachm. The apex-beat was frequently counted and the urine measured six-hourly as before. The observations were continued in the same way for five days subsequent to the day of administration. The whole of this procedure was repeated after the lapse of a fortnight so as to furnish a second and controlling experiment.

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[9] The apparatus is made by Siebe Gorman, Ltd., 187, Westminster Bridge-road, S.E.

[10] A special order should be given for these tropical standard tubes.

[1] Eggleston: American Journal of Medical Sciences, 1920, clx., 625.

[2] Eggleston and Wyckoff: Archives of Internal Medicine, 1922, xxx., 133.

[3] Fraser, F. R.: THE LANCET, 1922, ii., 703.

Table showing Effect of Digitalis on Heart-rate and Urinary Output.

Case.	Age.	Heart-rate at—			Rise or fall.	Amount of urine—		
			9 A.M.	9 P.M.		Day before.	Digitalis.	Day after.
1	38	(*a*)	90	72	−18	84	71	52
		(*b*)	80	70	−10	70	45	58
		(*c*)	110	85	−25	54	86	34
2	47	(*a*)	115	85	−30	42	65	80
		(*b*)	105	95	−10	55	57	50
3	50	(*a*)	95	105	+10	62	56	63
		(*b*)	84	94	+10	66	79	82
4	43	(*a*)	128	130	+ 2	42	35	31
		(*b*)	95	104	+ 9	67	24	42
5	28	(*a*)	66	63	− 3	32	44	41
6	40	(*a*)	100	91	− 9	44	32	50
		(*b*)	100	76	−24	53	36	41
7	31	(*a*)	92	90	− 2	52	33	32
		(*b*)	140	115	−25	68	64	92
	Average		102	92	−10	56·5	52	53·4

Results in seven cases of auricular fibrillation free from failure. (*a*), (*b*), and (*c*) indicate separate experiments. The heart-rate is reduced on the day of administration in five out of seven cases; the urinary output is unaffected.

Results.

Effect on Heart-rate.—The heart-rate was in most cases affected to some extent on the evening of the day of administration, about 12 hours after the first dose had been given, and the average fall in rate by this time was ten beats per minute. This fall was maintained the next morning, and later on in that day a further fall of ten beats per minute occurred, though no more digitalis had been given. The quality of the pulse was much improved, the volume being larger. In a few cases coupled beats appeared temporarily. This control of rate, however, was not very stable, as counts taken after meals or after slight exertion or excitement nearly always showed that the pulse had risen towards its original rate. Very often, also, there was a relapse lasting for a few hours without any apparent cause. The total duration of the effect was from four to 14 days.

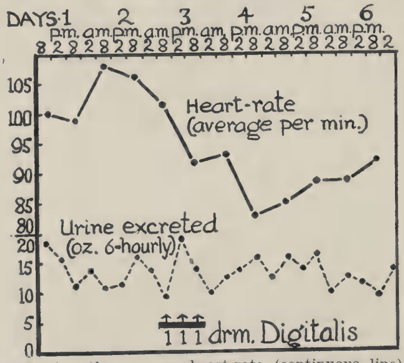


Chart showing the average heart-rate (continuous line) and amount of urine excreted (interrupted line) before and after digitalis.

Effect on Urinary Output.—Digitalis had no definite diuretic effect on any case; this observation confirms the general view that digitalis exerts little or no diuretic effect (even in large doses) unless œdema, obvious or masked, is present. The chart does seem to indicate an increase, amounting to 4–6 oz. during the six hours following the administration of the first dose of digitalis, but there was no increase in the total daily amount, either on the same or on the following day.

Effect on Symptoms and General Condition.—The patients all felt better and said that they had less palpitation. As all signs of failure were absent in the cases observed, there was no opportunity of judging the effects of digitalis on this condition.

Absence of Vomiting.—Apart from occasional coupling of the pulse in two cases there were never any indications of overdosage. Nausea and vomiting were never seen—a fact of special interest, tending to show that the vomiting which sometimes occurs early in the administration of digitalis in heart failure depends far more upon the failure of the heart than upon any irritant effect of this drug on the stomach.

Clinical and Laboratory Notes.

A CASE OF FIBROMYOMA OF THE STOMACH.

BY J. E. G. CALVERLEY, C.M.G., M.D., B.S. LOND.

THE following case is of interest and merits record.

A married woman, aged 50, was suddenly attacked with acute epigastric pain and vomiting. Dr. P. S. Mandy, under whose care the patient had been 15 months ago for severe hæmatemesis, sent her to the Royal Victoria Hospital, Folkestone, for a "leaking gastric ulcer."

On admission to hospital all symptoms had subsided, and the patient was quite comfortable, and in a short time was on full diet. On the fifth day after her discharge there was a recurrence of the acute symptoms, but on readmission all symptoms had subsided. There was no tenderness in the epigastric area; but on one examination a sense of fullness was perceptible over the right rectus (Dr. Mandy had felt a definite tumour). A test-meal, examined by Dr. R. E. Bamford, the house surgeon, showed slight hyperacidity. The history suggested gall-bladder trouble, and an exploratory laparotomy was advised.

Before operation was performed, it was thought an X ray might throw some light on the condition, and this completely altered the diagnosis of gall-bladder. Colonel C. H. L. Palk, radiologist to the hospital, reported:—

> "The lower border of stomach reached several inches below the umbilicus, peristalsis poor, body of stomach appeared as two large areas connected by a narrow channel; there was no obstruction, although some barium was held up in the upper part; a good deal had passed on into the lower area. The condition is suggestive of chronic ulcer."

Operation.—The pyloric end of the stomach was filled with a growth, the size of a Tangerine orange, which on slight manipulation was released from this part of the stomach, and could be moved in all directions. The growth was removed by a partial gastrectomy.

The sudden onset of pain and vomiting was, no doubt, due to obstruction of the pylorus by the tumour, and if an examination had been made during one of the attacks the tumour would have been detected by palpation. The growth was rounded in shape, and partially covered with mucous membrane, which at one spot was ulcerated. The free surface was dimpled, the size of a small thimble. On section the tumour consisted of two encapsuled growths, one on each side of the dimple.

The report of the Clinical Research Association was as follows:—

> "The section shows a fibromyoma arising in the upper layers of the muscular coat. It is little removed from a fibrosarcoma in appearance, and some pathologists might give it that name, but we think it is probably an innocent growth. The condition is uncommon."

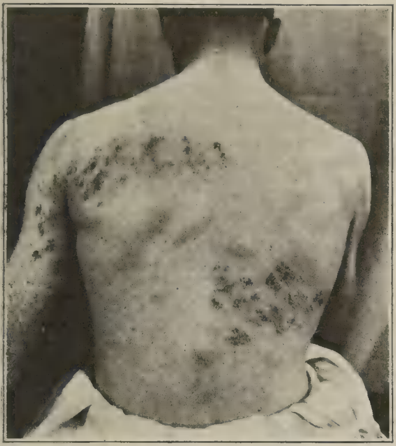
Folkestone.

A CASE OF BILATERAL HERPES ZOSTER.

BY E. R. C. WALKER, B.A. CAMB., M.B., CH.B. EDIN.,
RESIDENT PHYSICIAN, THE ROYAL INFIRMARY, EDINBURGH.

IN the following case the patient could not recall any previous illnesses, and did not remember being in contact with any case of herpes zoster or of chicken-pox.

He was a general labourer, aged 29, of Irish nationality. For about two months before the onset of acute pain he had occasionally experienced a tingling sensation on the upper part of his chest on both sides. About a fortnight before the appearance of the rash he had a stabbing pain about two inches above the left nipple. Ten days later a similar pain developed on the right side at a somewhat lower level. Two days later the rash appeared on both sides. The patient thought it appeared first on the left side, but was not certain. The distribution was as follows: Right side: from ninth, tenth, and eleventh dorsal vertebræ spreading round the chest to midway between the umbilicus and ensiform cartilage in front. Left side: from fourth, fifth, and sixth dorsal vertebræ spreading round underneath the shoulder, above the nipple to fourth and fifth costal cartilages in front, and also down posterior fold of axilla and back of arm.



Showing distribution of lesions on the back after the vesicles had broken down. The photograph was taken by Dr. W. D. Small.

Condition on Admission.—When, on Feb. 2nd, 1924, he was admitted to hospital, seven days after the appearance of the rash, the temperature was 98·2°F., respirations 24, pulse 120. There was a slight rise of temperature in the evening, but this subsided during the night, as did also the respirations and pulse. Wassermann reaction was negative. Urine normal. Bowels slightly constipated.

He made a complete and rapid recovery.

The unusually long history may perhaps be due to the patient's nationality. He was somewhat vague as to facts, and his native courtesy made him very willing to oblige in the matter of remembering early symptoms. He was, however, quite definite about the pain above the nipple a fortnight before the appearance of the rash.

I have to thank my chief, Prof. Jonathan Meakins, for leave to publish the case.

KENT COUNTY OPHTHALMIC HOSPITAL, MAIDSTONE. The annual report of this institution stated that the accounts were satisfactory, but owing to the transition state of the hospital, due to building and rebuilding operations, it was difficult to make any comparison with past years. The total sum realised by the Extension Fund Appeal amounted to over £15,000. The board expressed its deep gratitude to Mr. Wheler Bennett for his handsome contribution of £10,000 to the hospital. The importance of the Weekly Subscribers' Fund was shown by the fact that four years ago this fund amounted to £192 and had now increased to £7925. There were at the moment 206 cases awaiting admission.

Medical Societies.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held in Liverpool on March 14th, with Dr. A. DONALD, the President, in the chair.

DISCUSSION ON PRIMARY PULMONARY THROMBOSIS.

The discussion on the paper read by Prof. E. Glynn,[1] postponed from the meeting held on Jan. 18th, was opened by Prof. BLAIR BELL. He said that to gynæcologists the question of primary pulmonary thrombosis was of special interest, as in all gynæcological clinics throughout the world this disaster had occurred with greater frequency than in the clinics of the general surgeons. Prof. Glynn would, however, be the first to disclaim any suggestion that the idea of primary pulmonary thrombosis was a new one. It had frequently been discussed during the last 50 years, during which time there had been a considerable division of opinion not only as to whether primary thrombosis in the pulmonary artery was commoner than embolus of the vessel, but also concerning the relation of thrombosis in the systemic veins to clots in the pulmonary vessels, and, moreover, whether clotting in the pulmonary artery was centripetal or the reverse. Nevertheless, Prof. Glynn's name would always be associated with the pathology of the subject because he had based his views on strict pathological investigation, a method not adopted by the earlier writers. Prof. Blair Bell thought that the main pathological contentions submitted by Prof. Glynn could hardly be controverted. Prof. Glynn stated that he had performed 35 consecutive autopsies on cases of pulmonary embolus and thrombosis; and in 30 (85 per cent.) of these he had found that the fatal lesion was primary pulmonary thrombosis. He adduced as evidence of primary thrombosis not only the presence of blood-clots, which might be found in all lobes of both lungs, but also proof that they were of ante-mortem formation, for age changes, such as deposition of blood-pigment, were demonstrated in nearly all, and commencing organisation was found in the clot in one-third of the specimens—conditions that could not possibly have developed in the few minutes generally supervening between the onset of the lethal seizure and death. The question of pulmonary embolus did not require special consideration, for the cause and mechanism were easily understood. Moreover, embolism was comparatively rare. The discussion of Prof. Glynn's paper really centred on the problem of the causes and prevention of primary pulmonary thrombosis, and it was probable that the greater frequency of this condition after gynæcological operations was attributable to two causes: (*a*) injury to large veins; (*b*) proximity of large vessels to septic foci. With regard to the first, injuries might be produced in several ways, the chief of which were the temporary application of compression forceps to big vessels like the ovarian, and the stripping free of large veins from the surrounding tissues, in which circumstances actual clotting or pre-clotting changes might more readily be produced in the blood contained within the lumen of the vein. The proximity of large vessels to septic foci was no less important. The proximity of large vessels to a septic area was conducive to changes in the bloodstream by the passage of toxins or organisms through the vessel walls. If the sepsis was severe actual thrombosis might occur in the pelvic veins, in which case a pulmonary embolus was a contingency to be remembered and avoided by suitable measures, such as rest. If the sepsis were mild, local thrombosis did not occur, but the toxins which reached the bloodstream were predisposing factors of pulmonary thrombosis.

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[1] THE LANCET, Feb. 23rd, 1924, p. 390.

Prof. Blair Bell next directed attention to the numerous other predisposing or determining factors of primary pulmonary thrombosis. These were classified in the following groups:—

1. *Abnormalities in the Blood before Operation.*—There was evidence to show that bacterial toxæmias, toxæmias due to malignant disease, and anæmia from loss of blood might all, in one way or another, lead to conditions in the blood favouring clotting. In addition, actual loss of water from the tissues of the body by excessive pre-operative purging must be considered a definite predisposing cause.

2. *Abnormalities in the Blood after Operation.*—After operation the changes in the blood that predisposed to clotting were due to loss of fluid from the tissues and the effects of anæsthesia. The latter produced in the blood changes that favoured intravascular clotting. Many years ago Prof. Blair Bell had found that in vitro chloroform produced hæmolysis much more readily than ether, and he had no reason to doubt that the same might occur in vivo. Acidosis also, which often supervened on anæsthesia, was a state favouring clotting of blood. Then, again, as Prof. Glynn had said, deficient oxygenation, the result of inactivity during convalescence, was a factor of the greatest moment.

3. *Abnormalities in the Rate and Force of the Flow of Blood after Operation.*—During convalescence, with the patient bedridden, all mental and physical incitements to a rapid flow of blood, an increase in the blood pressure, and a high degree of oxygenation of the blood were reduced to a minimum. How important as determining factors in regard to intravascular clotting the resulting alterations might be would have been realised from Prof. Glynn's remarks about the statistics of Prof. Blair Bell's own cases. Nevertheless, an endeavour had been made to eliminate as far as possible *all* predisposing and determining causes, for in regard to intravascular clotting absolute safety could only be obtained by the abolition of all possible influences, and not only of one or two. The various procedures, many in general use to-day, which in one way or another assisted in the avoidance of the terrible catastrophe were, therefore, summarised.

Pre-operative Precautions.—In cases, especially of fibromyomata, in which the patient was very anæmic, blood transfusion should be practised immediately prior to operation. Pre-operative purging and starvation had almost disappeared from surgical practice, for it was quite unnecessary and robbed the patient of fluid from the tissues. In certain cases in which operations were planned in connexion with malignant disease blood transfusion might greatly improve the state of the patient's blood. In septic cases operation should be delayed, if there was no danger to life, until some immunity in the patient had been established.

Operative Methods.—In connexion with the operation itself, care should be taken as far as possible to avoid stripping bare the great veins on the wall of the pelvis. Clamps should not be placed on large vessels, such as ovarian, prior to ligation; they should be tied cleanly, and then divided. This was specially important in hysterectomy for fibromyomata. In dealing with torsion of the pedicle of an ovarian tumour, in which thrombosis had already occurred, the ovarian vessels should be ligated as high as possible, and not merely at the site of the twisted pedicle. Septic areas in which organisms were alive should be drained; it was a wise procedure to drain all pelvic abscesses not enclosed in the uterus, tubes, or ovaries, which could be removed. Loss of fluid was prevented by careful hæmostasis, and by avoidance of the undue exposure of the peritoneal surface.

Post-operative Care.—With regard to post-operative measures designed to lessen the risk of pulmonary thrombosis, a few only could be mentioned. Loss of fluid, which was to some extent unavoidable during an abdominal operation, was made good by rectal salines, to which glucose had been added to reduce the condition of acidosis that followed the administration of all anæsthetics, but more especially chloroform which was still used by some. Fluid and food by the mouth should be given soon after operation. Intestinal distension, which impaired the movements of the diaphragm, could be effectually treated by the use of infundibular extract followed by turpentine enemata. The blood pressure could be raised, if necessary, with infundibular extract. Finally, the use of systematic exercises accompanied by deep breathing were of the highest value in the prevention of pulmonary thrombosis. Since the adoption of these in January, 1916, only one patient in the gynæcological wards at the Royal Infirmary and one in private practice had been lost from pulmonary thrombosis. The first, a much blanched patient with organic heart disease, died ten days after hysterectomy for fibromyoma. The sister in charge decided, on her own initiative, that the patient was not strong enough to practise movements. The other patient died on the fifth day after operation, and there was some doubt whether she also was not considered by the sister in charge too ill to perform the exercises—in fact, it was almost certain that she did not do them. Naturally, in the presence of thrombosis in the pelvic and femoral veins exercises should not be practised lest emboli be detached, but the patient should indulge in deep breathing.

From what had been said it would be realised that modern surgical practice included many, if not most, of the preventive methods emphasised, and this may have accounted for the fact that death from pulmonary thrombosis was not so common as formerly when patients were purged, chloroformed, and subsequently starved. Nevertheless, the statistics of Prof. Glynn showed that the exercises first described in detail by Prof. Blair Bell in the third edition of his "Principles of Gynæcology" (1919), and employed since January, 1916, had reduced the gynæcological wards at the Royal Infirmary from the head of the list in regard to both the number and the percentages of deaths from pulmonary thrombosis to the bottom. Methods that had effected such an improvement over a period of eight years could not be lightly criticised.

Prof. H. **BRIGGS** (Liverpool) asked when physical exercises should begin and whether the primary pulmonary thrombosis was consequential on a local lung infection. These surprises had not yet been fully explained by the general pathologists.

Mr. K. W. **MONSARRAT** (Liverpool) said that he considered that pulmonary embolism and primary pulmonary thrombosis should be considered separately. He thought that pulmonary embolism was usually due to the detachment of clot in wounds not sterile. With regard to pulmonary thrombosis, he considered an explanation had not yet been given of the tendency to the formation of the clot in the pulmonary artery. He considered that it was probably related to a variety of conditions in the lung which tended to chronic stasis in the pulmonary circulation, as, for example, post-anæsthetic bronchitis. He considered that ammonium carbonate was of some value as a prophylactic.

Miss F. **IVENS** (Liverpool) mentioned that she had had five cases of sudden death in a series of 2500 cases of abdominal section. Sudden death occurred when all was apparently doing well. In one case of death on the eighth day the post-mortem revealed only a much enlarged thymus. In the second, a robust young lady of 25, with a gangrenous appendix, death occurred as she stepped out of bed on the fourteenth day. In the third, an elderly lady with prolapse, two small fibroids, and a chronic appendix, death occurred suddenly on the ninth evening after operation. In the fourth, an anæmic woman of 37, with uterine fibrosis and infected cervix, death occurred nine days after a panhysterectomy. In all these cases the temperature chart and pulse-rate were normal, but sepsis could not be excluded. Two were private cases and post-mortems were unobtainable. In the fifth, a married woman of 30, a right ovarian tarry cyst had been removed. A subnormal temperature was noted on the seventh day, with normal pulse. On the ninth, in the early morning after an action of the bowels, intense pain in the back occurred, and the patient became livid with rapid thready pulse. A violet coloration appeared over the abdomen and thorax, and death took place in four hours, consciousness persisting almost to the end. Miss Ivens thought it possible that in this case thrombosis had spread up from the ovarian veins, induced perhaps by toxins absorbed from the ruptured tarry cyst. The bacteriological findings were negative, but no post-mortem could be made. Miss Ivens stated that in none of her cases had exercises or massage been advised. Prophylactically she attached more importance to an aseptic technique, to the avoidance of bruising of the tissues, and to the dilution and diminution of toxins, whether bacterial or the products of tissue death which tended to cause vascular degeneration.

Mr. **FRANK JEANS** (Liverpool), speaking from the point of view of the general surgeon, said that two factors were important in the production of the condition: (*a*) Slight (not severe) sepsis. He had known pulmonary thrombosis to occur after a breast operation in which a serous effusion had been aspirated on the eighth day and proved sterile on culture—a severe test of asepsis—but one which did not preclude a minute infection. (*b*) Lack of movement on the part of the patient. His impression was that the condition always occurred in the case of the placid patient who was as good as gold and always did as she was told. The patients who got excited and waved their arms and got out of bed never got thrombosis. For this reason he favoured exercise and agreed with Prof. Blair Bell.

Some Theories Criticised.

Mr. **P. R. WRIGLEY** (Manchester) said that his personal experience of this condition was not extensive. In common with other surgeons who had been operating for a number of years he had had a few unexpected and sudden deaths following operation which had been attributed to pulmonary embolism, but for various reasons post-mortem examination had not been possible. Thirteen years ago he operated on a middle-aged woman for extensive varicose veins in the leg, a case which nowadays he would refuse to treat by operation. A few hours after the operation she sat up in bed and became very dyspnœic and died within a few minutes. This he regarded at the time, and still believed to be, a pulmonary embolism. He had met with several other cases in which on about the tenth day following laparotomy the patient had suddenly complained of pain in the chest with great difficulty in breathing followed by hæmoptysis. The symptoms had persisted for a few days, gradually lessening and finally disappearing. These symptoms he believed to be due to thrombosis in the systemic circulation resulting in the minute emboli in the lungs. His house surgeon at the Manchester Royal Infirmary had taken considerable pains to investigate post-mortem records of the Infirmary for the past five years with the following result: During that period there were nine patients who died after operation, and in each case death was attributed to pulmonary embolism. Full details of the clinical features of these cases were not available, but in all of them the operation wound was stated to be nearly healed, so that some days at least must have elapsed between the day of operation and death. In six of these cases the post-mortem revealed thrombosis either of the main pulmonary artery or of one or both of its branches. In the other three cases post-mortem examination showed acute dilatation of the heart and in no case was there an embolism, which bore out Prof. Glynn's statement that primary thrombosis of the pulmonary artery was much more common than embolism. It had been suggested that pulmonary embolism and thrombosis were due to two chief factors—mild sepsis and pulmonary stasis. If mild sepsis was an important factor; why was it more common to get thrombosis or embolism after operations on the pelvis and abdomen and so rarely after operations on the head, neck, and arms, unless this sepsis was due to some organism which normally inhabited only the abdomen, such as the *Bacillus coli?* If due to pulmonary stasis, why did it not more frequently follow operation such as radical amputation of the breast, where one side of the chest must have its movements impaired? On the other hand, after abdominal operations one would expect thoracic breathing to be much exaggerated. He thought there must be many other factors at work as well as these two. He had never ordered routine exercises for patients, but had encouraged them to move and to change their position from the day of the operation with the idea of preventing bronchitis and pneumonia. Prof. Blair Bell had suggested that one predisposing cause might be stripping of large veins in the pelvis, but if this was the case, why did we not more frequently meet with it after operations for removal of malignant glands from the neck and the axilla where the large venous trunks were dissected free from their sheath for a distance of some inches?

Secondary Anæmia as a Factor.

Dr. **FLETCHER SHAW** said he spoke merely to mention one factor in the production of thrombosis which previous speakers had overlooked—viz., anæmia from long-continued hæmorrhage. In his own private practice he had had three cases of sudden death attributed to embolism or thrombosis, all following hysterectomy for fibroids. Two of these occurred within a few weeks of each other and the shock had caused him to investigate the matter deeply. He found in two years he had performed hysterectomy for fibroids on 135 patients and five of these were noted as suffering so severely from the effect of hæmorrhage that they were kept under treatment for some time before operation was undertaken. Of these five anæmic patients, three died, two from embolism or thrombosis and one from heart failure, while amongst the other 130 patients there was only one death and that from acute nephritis, which probably had nothing to do with the operation. He thought this profound anæmia before operation should be emphasised as a contributory factor in the production of thrombosis.

The **PRESIDENT** remarked that he was in full agreement with Dr. Fletcher Shaw in attributing great importance to profound anæmia as a contributory cause of thrombosis, and was surprised that so little notice had been taken of this in the remarks of previous speakers. After a careful study of the records of 830 abdominal operations in his nursing home, he had found that three patients had died as the result of thrombosis or embolus. In each of these cases the operation was for a large fibroid tumour, and all the patients were profoundly anæmic. He thought that in every case of thrombosis there was some infection or toxæmia, and yet the curious fact remained that thrombosis seemed rarely to occur in cases of acute pelvic abscess. He had never seen it following operation for pyosalpinx or abscess of the ovary. The organism must be of a type which favoured clotting of the blood. He thought that in most of these very anæmic patients with fibroid tumours there was a certain amount of toxæmia. The most important point in the prevention of these cases was the most scrupulous, and even exaggerated, attention to aseptic technique, in all tumours associated with much hæmorrhage. He felt sure that the cases were not nearly so common in recent years as they had been. Blood stasis might have some effect, but it only played quite a secondary part.

Sepsis as a Factor.

Dr. **MORRIS J. COHEN** believed that sepsis was the main factor in the causation of pulmonary thrombosis. In 22 cases investigated at the Thompson Yates Laboratories, 11 showed definite sepsis at site of operation; in 11 cases where weight of spleen was noted the average was 7 oz. (cf. normal 4 to 5 oz.).

In 18 cases bacteria were demonstrated in systemic or pulmonary clots or in the lungs. In some they were found in all three places. In 11 of these cases streptococci were prominent. Pre-existing lung lesions such as emphysema, recent or old pleurisy, quiescent tubercle were demonstrated in 16 cases. The temperature charts in all cases showed abnormalities, although in several the temperature was but slightly raised. The reason why thrombosis is commoner in the pulmonary than in the other arteries appears to be the fact that although the pulmonary artery is such by name and structure, yet it functions as a vein. The blood it conveys is of a more venous character than in any vein in the body: it is rich in carbon dioxide and in septic products and products of disintegrating tumours if sepsis or neoplasm be present, and it is also rich in kinase if thrombo-kinase be liberated in the tissues. All these are potent factors in the formation of a thrombus.

GLASGOW SOUTHERN MEDICAL SOCIETY.

A MEETING of this Society was held on March 13th, with Dr. D. G. **CARMICHAEL** in the chair, when Mr. W. A. **SEWELL** read a paper on

Intussusception.

He outlined the pathological features of the condition, and its age and sex incidence. With regard to the mechanism of production of intussusception, he did not agree that there was usually some antecedent disturbance of the bowels; in his series of 31 cases, diarrhœa was present in only one. This was in agreement with the observation by Perrin and Lindsay that no case of intussusception was admitted to the London Hospital during an epidemic of diarrhœa which occurred in London in September, 1911; further, he had been informed by Dr. Leonard Findlay that intussusception had never developed in any of the many hundred cases of gastro-enteritis treated by the latter in the Royal Hospital for Sick Children, Glasgow. Occasionally cases of gastro-enteritis developed ileo-colitis, with blood and mucus in the stool; but in such vomiting was a rare symptom.

There were several theories regarding the cause of the invagination. (1) Presence of a polypus or neoplasm. This was very rare in the infant, although occasionally a swollen Peyer's patch might function as a sessile polyp and form the apex of an invagination. (2) While a long and loose mesentery might facilitate the formation of an intussusception, it was not the cause; further, such a condition of the mesentery was frequently found in adults, in whom intussusception was extremely rare. (3) Perrin and Lindsay had advanced as the determining factor the mass of lymphoid tissue situated around the terminal inch of the ileum. This lymphatic aggregation was most developed in the young child, and became progressively less with age. When it became inflamed and swollen it was treated by the gut as a foreign body, and might become the starting point of an intussusception. The greater liability of boys to infantile ailments, and the fact that the amount of lymphoid tissue in the body varied directly with the size of the child, might explain the preponderance of males in cases of intussusception.

The congestion and swelling of this lymphoid tissue was generally ascribed to changes in feeding during the early months of life. Mr. Sewell, however, felt that more importance should be attached to the appendix as a contributory factor in causing inflammatory changes in the lymphatic tissue of the ileum. In spite of the fact that acute appendicitis was very rare in the infant, he had been struck by the frequency with which lesions of a chronic type were noted in this organ during operations for intussusception. The appendix might be kinked, adherent, or ecchymosed; and while it might sometimes be difficult to exclude operative trauma in certain types of cases, he felt that his view was supported by the number of cases of vague abdominal troubles in children which were completely relieved by the removal of an appendix which showed no notable macroscopic or microscopic deviation from the normal.

With regard to diagnosis, Mr. Sewell thought that when a history of screaming, vomiting, and blood and mucus from the rectum was elicited, no time should be lost in sending the child to hospital for observation. An anæsthetic should be given, and the abdomen carefully palpated for the typical tumour, and rectal examination should never be omitted.

Treatment resolved itself into laparotomy and reduction at the earliest possible moment. A point of importance was the marked shock which frequently followed the reduction of the invagination; he had found that the application to the bowel of large swabs soaked in saline solution at a temperature of 105° F. did much to minimise this. Where the condition of the child warranted a slightly longer operation, he always performed appendicectomy, and he always closed the abdominal wound in layers.

In his series of 31 cases he had lost six; this figure included a case which recovered from the primary operation, but died after a secondary operation for ventral hernia. Resection had been necessary in four cases; in one the patient, an infant of three months, had been ill for 72 hours, and the gut was gangrenous; this case died. The remaining three cases—in children of 10 years, 2 months, and 3 months—recovered.

Prof. **JOHN GRAHAM** mentioned a case in which the invagination was due to a piece of paper swallowed by the child, and Mr. **ROBERT TENNENT** described a case of Henoch's purpura, where a hæmorrhage in the bowel wall had been the starting point of an intussusception.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on April 3rd, Dr. **ELIOT CURWEN**, the President, being in the chair.

Dr. **DONALD HALL** read a paper on

Electrocardiographic Records.

Lantern slides were shown of normal and abnormal electrocardiograms, the latter including various forms of premature beats, sino-auricular block, right and left-sided preponderances, auricular flutter, and auricular fibrillation. Diagrams were also shown upon the screen of the apparatus and of the anatomical relationships of the conducting apparatus within the heart. He said that this method of investigation was particularly useful in analysing accurately the different types of irregularity of rhythm, and in determining whether or not abnormalities of rate were caused in a rapid heart by an ectopic focus of stimulation, or in a slow heart by some degree of heart-block. The ventricular complexes gave information as to the state of the myocardium, which was not to be obtained by ordinary clinical methods. Electrocardiographic records gave information as to diagnosis, prognosis, and treatment, and from the last standpoint especially as to which cases were or were not likely to be improved by the use of digitalis. Too often in arrhythmia, or in tachycardia, digitalis was employed when its exhibition was useless, if not indeed actually harmful. With the precise knowledge afforded by an electrocardiographic record of the case this error could be avoided.

The **PRESIDENT**, Dr. H. **GERVIS**, Dr. L. A. **PARRY**, Dr. E. F. **MAYNARD**, and Dr. H. F. **SEYMOUR** discussed the paper.

Dr. H. M. **GALT** showed microscopical slides of Normal Heart Muscle; Fatty Degeneration of Heart Muscle; Fatty Infiltration of Heart Muscle; and a Section of Heart showing Fibroid Change.

Reviews and Notices of Books.

Canned Foods in Relation to Health.

By William G. Savage, B.Sc., M.D. Lond., County Medical Officer of Health, Somerset. Cambridge University Press. 1923. Pp. 146. 8*s.* 6*d.*

This book, which consists of the Milroy lectures for 1923, slightly amplified, comes as an interesting sequel to the work on food poisoning and food infections by the same author published in 1920. Dr. Savage shows how immensely this industry has grown during the war, so that canned foods have ceased to be a subsidiary means of supply and must now be regarded as an essential source of food. Though the canning industry is small in this country it is important in the United States and the overseas Dominions. Thus the U.S.A. census of 1914 showed 4220 canning establishments in that country, with 88,069 persons engaged. The interesting suggestion is put forward that a great increase of the canned fish industry would be possible in this country by means of a floating cannery to follow the abundance of fish as it moves past the various centres on the British coast. Dr. Savage has examined various methods of manufacture, and pays a high tribute to the work done by the National Canners Association (U.S.A.) in the improvement of the food products of its members. He also shows that the control exercised over canned foods at the port of entry is not satisfactory, and that better and more uniform methods are needed for dealing with the contents of rejected tins. These are now often wasted, but means might be devised for their legitimate use for various purposes. Dr. Savage urges that the date of preparation should be stamped on all canned foods, and, further, that there should be some code mark, disclosed to the Ministry of Health, whereby the tin could be traced back to the actual canning factory. As regards one variety of canned food—namely, condensed machine-skimmed milk—Dr. Savage sees no need for it, and thinks its manufacture in or importation into this country should be prohibited.

The possibility of the causation of disease by canned foods has been much discussed. Dr. Savage's conclusions are that canned foods are safer than fresh foods, but should not be made the main articles of diet, and deficiency in vitamins should be made good from other sources. He shows, further, that there is no evidence in favour of the widespread belief in the great toxicity of decomposing food, and that the danger to health is the risk of the infection of food with the specific bacteria associated with food poisoning. Defects in the preparation and distribution of canned foods are pointed out in his book, and the necessity for persevering efforts to remove them is urged. The author is, however impressed by the great value to the community of this method of food preservation, and convinced that its special risks are for the most part readily guarded against.

Galvanomagnetic and Thermomagnetic Effects.

The Hall and Allied Phenomena. By L. L. Campbell, Ph.D., Professor of Physics, Simmons College, Boston, U.S.A. London: Longmans, Green and Co. Pp. 311. 16*s.*

Hall, an American physicist, discovered that a magnetic field applied at right angles to the direction of an electric current in a conductor has some effect on the equipotential lines—it is quite a small effect and could easily be missed; there are temperature effects associated with this particular experimental arrangement, and these are also minute. This book of over 300 pages is concerned with these two and other associated effects. It must represent a painstaking piece of work, because the literature has had to be gathered from many obscure sources; perhaps this is a case in which the appearance of a book on the subject marks its end rather than its beginning. Doubtless the interpretation of the Hall effect in 1879 was very obscure, though Kelvin had predicted it. When the action was tested in different metals, theories on the subject multiplied, and the author gives quite a number of them in some detail. With the discovery of the electron, some of these theories appeared unnecessarily involved, and at nearly the end of the volume we learn that Hall now interprets the phenomena in terms of the movement of electrons having different functions within the atom.

The book is well produced and has an excellent bibliography.

Tropical Diseases.

Handbuch der Tropenkrankheiten. Third edition. Vol. I. General Editor: Prof. Dr. Carl Mense. Cassel, Leipzig: Johann Ambrosius Barth. 1924. Pp. 713. Gold marks 56.

Those who are familiar with the first edition of Mense which appeared in 1905 will hardly be surprised at the rather pretentious size and remarkable wealth of detail displayed in this—the third—edition. The bulk of the work is much increased by the inclusion of the large bibliography upon which German workers lay so much stress; the addendum dealing with the mosquitoes, for instance, occupies no less than 63 pages, and obviously is by no means complete.

This volume includes only two subjects—Applied Medical Entomology by Adolf Eysell, and Hæmatology by Victor Schilling. The first-named section contains all that is known on the classification, biology, anatomy, and morphology of ticks, insects, fleas, lice, spiders, and linguatulids. The illustrations, partly in line and partly photographic, are excellent. The second portion is an elaboration of a similar work by Schilling in the second edition, which was afterwards published separately in 1914. We have nothing but praise for this exhaustive account of tropical blood work, which is hæmatology in the best sense of the word; four beautiful coloured plates accompany it.

Orthopædic Surgery.

Selected Essays on Orthopædic Surgery from the Writings of Newton Melman Shaffer, M.D., F.A.C.S., Emeritus Professor of Orthopædic Surgery, Cornell University, &c. With Foreword by Dr. Lovett and Dr. Fisher, and Comments by Dr. Cotton, Dr. Nutt, Mr. Blagden, and Mr. Hardon. London and New York: G. P. Putnam's Sons. 1923. With frontispiece, and 14 plates and 51 figures. $5.

Although the papers reprinted in this handsome volume are not new—most of them were written more than 20 years ago—they are of great interest for they contain the fruits of an experience of the surgery of deformity and joint disease which has been unusually extensive. Dr. Shaffer may be considered as the best known living exponent of conservative orthopædics, and one who boldly preached his doctrine at a time when general surgeons were over-inclined to perform extensive operations for tuberculous disease of the joints. In his foreword, Dr. R. Lovett, of Boston, emphasises the importance of Shaffer's work and teaching on tuberculosis of the joints, and of his original contributions to our knowledge of various static deformities of the feet and their correct treatment. His skill in devising and in applying corrective and retentive instruments is of the highest order, and was never better shown than in his treatment of contractions of the foot and shortening of the tendo Achillis. He was one of the first to recognise the importance of the latter condition in the production of certain forms of flat-feet, and the reprint of his original papers on the subject of Non-Deforming Club-foot and on Flat-foot will well repay study at the present time, especially as the author has added to them up-to-date notes which enhance their interest.

The papers on Pott's Disease and Pott's Paralysis embody sound theories and modes of treatment which have hardly been improved upon, except as regards heliotherapy, in the 34 years which have passed since the later of them was written. As much may be said for the essay on Non-interference in Abscess of Chronic Tuberculous Disease of the Joints, of which the conclusions have been amply justified by subsequent experience—they practically form the basis of the most modern treatment in this country and on the continent. The reader must, however, be struck by the fact that not one of the three dozen papers which form this volume is devoted to a study of anterior poliomyelitis or its resultant deformities. This omission cannot have been due to lack of opportunities of study and treatment of this disease. Apparently the subject did not appeal to Dr. Shaffer. Yet he was a pioneer in the movement for the State care of cripples, and for some years superintendent and surgeon in chief of the New York State Hospital for Cripples, where assuredly there were many cases of infantile paralysis among the inmates.

We are, perhaps, justified in assuming that since the title-page of this book informs us that Dr. Shaffer was a medical student as long ago as 1863, he has now retired from active practice, and that in congratulating him on this, his farewell publication, we may wish him many years of enjoyment of his well-earned leisure.

Physiology and Pathology of Bone.

Die Normale und Pathologische Physiologie des Knochens (Experimentelle Orthopädie). By Dr. Walther Müller, Privatdozent für Chirurgie und Orthopädie, Assistent der Chirurg. Univ. Klinik, Marburg (Lahn). Leipzig: Johann Ambrosius Barth. 1924. Pp. 218. Gz.12–14.

A highly specialised book of this description will, of course, only appeal to a certain audience, but to those interested in experimental orthopædics it can be well recommended. Stress is naturally laid on the importance of mechanical factors in connexion with the growth and modification of bones, and these are such as render it often highly unsafe to draw conclusions from animals for application to man. There are 67 figures, mostly radiographs, illustrating abnormalities of bones, variously produced. Bone regeneration and callus formation, rickets, and osteomalacia are fully discussed, and much prominence is given to the influence of the organs of internal secretion on the physiology and pathology of the bones. Altogether it is a very valuable monograph.

Anæsthesia in Dental Surgery.

By T. D. Luke, M.D. Fifth edition. Edited by J. Stuart Ross, M.B. With Chapter on Local and Regional Anæsthesia by Major W. T. Finlayson, L.D.S. Ed. London: William Heinemann. With illustrations. Pp. 238. 10*s.* 6*d.*

Owing to Dr. Luke's death the present edition of this book is Dr. Ross's work, and it more than maintains the standard set by the original work 20 years ago. In a comparatively small volume which is intended primarily to be of practical help to those not constantly engaged in anæsthetics there cannot be much space devoted to the physiology or chemistry of anæsthesia. Nevertheless, Dr. Ross has managed to include the leading facts and to write the book in such a way that its reader is led to understand the principles on which he should work, and to become no mere rule-of-thumb administrator. The chapter on local and regional anæsthesia, contributed by Major Finlayson, gives clear and illustrated directions for carrying out the various injections. The whole book is an admirable guide for those entering upon the administration of anæsthetics in dental cases.

Plant Physiology.

The Physiology of Photosynthesis. By Sir J. C. Bose. London: Longmans Green and Co. 1924. With 60 figures. Pp. 287. 16*s.*

As is customary with this author, this book is not a treatise on the whole problem of photosynthesis, but an account of the investigations made by himself and his associates at the Bose Research Institution in Calcutta. And, as one would expect from his previous work, it is largely devoted to the description and exploitation of self-recording apparatus for measuring plant activities. He has worked with the submerged water-plant *Hydrilla* and recorded the evolution of oxygen. With this as a standard test-object he has investigated the influence of light, temperature, and concentration of CO_2 and of the state of functional activity which he calls "tone." Those with no particular interest in botany will find his apparatus worth considering; they may quite likely extract something from it which would be useful in other work. And the questions of how the various factors which influence photosynthesis influence one another, of limiting factors, and whether the total change is the sum or the product of its constituents are of wide general interest.

The Kingdom of Evils.

Psychiatric Social Work presented in 100 Case Histories, together with a Classification of Social Divisions of Evil. By E. E. Southard, M.D., late Bullard Professor of Neuropathology, Harvard Medical School; and Mary C. Jarrett, Associate Director, Smith College Training School for Social Work. With an Introduction by Richard C. Cabot, M.D., Professor of Social Ethics, Harvard University. London: George Allen and Unwin, Ltd. 1923. Pp. 708. 24*s.*

This book was almost completed before the sudden death of Dr. Southard in 1920. It is a record of a large amount of unselfish work, but the rather indefinite value ascribed to it in the preface and introduction is confirmed by perusal of the case-histories. The psychiatric jargon in the descriptions is unfortunate, and only obscures the issues. Nothing is gained by classifying indiscriminately as *Errores* ignorance, misinformation, and misinterpretation, and as *Vitia* not only vice, but also such bad habits as "laziness about brushing one's teeth." The actual records are for the most part hazy and indefinite, though some of the cases are interesting, and there are useful hints in the book. For example, Case 6, an alcoholic of 20 years' standing, seems to have been much benefited at the Psychopathic Hospital by the meetings of the "men's club" organised by convalescents from alcoholism and one or two social workers. Further details of this mutual work by a group with the same failing would have been interesting.

Throughout the grain is so mixed up with the chaff that few are likely to have the time or patience to attempt its separation, but those who do so will find it worth while.

Pathology.

Lehrbuch der Speziellen Pathologischen Anatomie für Studierende und Aerzte. Seventh and eighth editions. Von Edward Kaufmann, ord. Prof. der Allgemeinen Pathologie u. Path. Anatomie. Göttingen, Berlin, and Leipzig: Gruyter and Co. In two vols. Pp. 1962.

Prof. Kaufmann's well-known text-book on special pathology has been entirely revised and considerably increased in size, and now forms two massive volumes. It is a monument of industry and learning, and is the acknowledged work of reference in this subject. Omissions have been searched for but in vain, and though it is scarcely likely that the author has touched absolute perfection, any lesion not mentioned in his book may safely be looked upon as extraordinarily rare if not actually unique. In spite of its size, the book has been written with due regard for relative values; many subjects have been skilfully condensed, and though a more detailed treatment of certain aspects of disease might be desired, it must be acknowledged that the author's judgment on what should be stressed and what treated more lightly is generally sound. The format is excellent, and we presume that the numbering of the editions means that a later version has replaced an earlier.

COLITIS.

Les Colites. Consultations sur les maladies de l'estomac et de l'intestin (cours de gastro-entérologie de l'Hôpital Beaujon). Par PAUL CARNOT, PAUL HARVIEX, R. FRIEDEL et LARDENNOIS. Paris: J. B. Baillière et Fils. 1923. Pp. 224. Fr.10.

THIS little book contains a series of lectures on the modern methods of gastro-enterologic diagnosis and treatment. A mass of information on the normal functions of the alimentary canal is compressed into small space, and is still in a form easily assimilable by the student. Radioscopic examination, both by screening and by test meals, the chemical and microscopic examination of the fæces, sigmoidoscopic examination, the normal anatomical structure of the intestinal canal are all reviewed in turn. The illustrations are rather crude diagrams, but serve their purpose.

The Conduct of Medical Practice.

A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.

XV. MEDICAL CERTIFICATES IN LUNACY.

BY BEDFORD PIERCE, M.D., F.R.C.P. LOND.,
CONSULTING PHYSICIAN TO THE RETREAT, YORK.

"Litera scripta manet."

IT was clearly the intention of Parliament that medical men discharging the responsible duties assigned to them under the Lunacy Acts should be adequately protected. Section 330, Subsection (1) states:—

> ". . . . a person . . . who signs or does any act with a view to sign any report or certificate purporting to be a report or certificate under this Act, or does anything in pursuance of this Act shall not be liable to any civil or criminal proceedings, whether on the ground of want of jurisdiction or on any other ground, if such person has acted in good faith and with reasonable care."

Nothing could be more explicit, but it would appear from a recent judgment that the onus of proving good faith and reasonable care may be thrown upon the physician. Moreover, though it is stated in Subsection (2) of the same Section 330, that a judge may, if so inclined, stay any proceedings against a physician, it does not say that he *must* do so, if he is satisfied that the physician did exercise reasonable care and acted in good faith. The whole position is therefore unsatisfactory, and medical men who do their duty both to their patients and to the community in the most conscientious manner may be placed in an awkward and even serious position.

Position in Need of Amendment.

The present state of affairs is so extraordinary that it is surprising any enlightened community can tolerate it. The public provides and equips at very great expense mental hospitals for the treatment of mental disease but declines to allow anyone to be received voluntarily for treatment. Certificates in lunacy are required before a patient can be admitted, and upon medical men is placed the responsibility of signing these certificates. Yet it would seem they are not effectively safeguarded in the discharge of this public duty. Years afterwards the findings of medical men in a matter that is peculiarly their province may be reviewed and even reversed by a jury of laymen none of whom had even seen the patient at the time.

All are agreed that the law requires amendment; but it may be long before anything is actually done, and in the meantime patients have to be treated and certificates must be signed. The medical profession will not stand aside and permit these patients to suffer and to cause grievous suffering to others merely because it may involve some personal risk to help them under existing legal conditions. In my opinion, however, this risk is for the general practitioner almost negligible if reasonable precautions are taken. Doubtful cases are not so numerous as is assumed, and where there is doubt delay rarely does harm. As a rule, the difficulty is not in the signing of the certificate, but in deciding whether hospital treatment is desirable.

General Principles of Certification.

The chief consideration in the great majority of cases is the welfare of the patient, it being impossible to secure proper treatment at home. Until patients can be received voluntarily into mental hospitals, large numbers of poor persons must be certified, since in no other way can they be treated effectively. The establishment of psychiatric clinics in large centres of population would to an even greater extent reduce the need for certification. In a minority of cases legal detention is demanded in the interests of the public; and here special care is needed, and it is often desirable to see a patient several times before coming to a decision.

For private patients two certificates by independent medical practitioners are required. They must see the patient separately, and one of them should, if possible, be the usual medical attendant of the patient. This provision alone greatly reduces the risk of legal trouble later on. A single certificate, however, suffices for a pauper patient; and here it must be remembered that the inability to meet the cost of treatment frequently results in the patient being classified as a pauper, although but for this the family is self-supporting. One certificate, also when accompanied by a medical certificate of emergency, suffices for the admission of a private patient as a temporary measure under an urgency order.

The Certificate a Legal Document.

The certificate is a legal document, and as such it must be judged by legal and not by medical standards. It gives the evidence which justifies the serious step of depriving a person of his liberty. It consists of two parts, usually printed on the forms provided, and I fear sometimes the full meaning is not fully appreciated. First, it states that the patient is of unsound mind, second, that he is "a proper person to be taken charge of and detained under care and treatment." Then follows the reasons for arriving at this conclusion. It is not sufficient to show that the person is insane; it is also necessary to show that he needs to be taken care of and detained.

Facts Observed at the Time of the Examination.

These facts constitute the essential part of certification, and unless they are adequate the certificate is invalid. But in some cases, although there is no doubt about the insanity of the patient and the need for detention, he may during the examination give plausible accounts of his conduct or may deny the statements made by trustworthy people. Again, a patient may vary in his mental state, being reasonable when the doctor is present and quite otherwise when he has gone. A second and third examination will in such cases usually suffice to elicit the actual facts.

The most difficult cases are those with mild degrees of mania or melancholia. The former may ruin themselves with extravagance or exhibit serious misconduct, whilst the latter sometimes commit suicide before steps are taken to safeguard them. Whatever is done or is left undone will probably be criticised adversely after the event by somebody. On the whole, however, the risks of delay are less serious than those involved in prompt certification. Moreover, in this type of case it will be found almost impossible to describe the condition in terms that will be convincing to anyone who cannot observe the patient for himself.

It is often possible to bring information received from friends up to date by discussing it with the patient. Thus: "He admitted that he stopped a complete stranger in the street yesterday and asked him why he made an offensive remark and that the stranger denied having spoken at all." Again, the patient's manner and mode of reply when reminded of incidents are valuable evidence: "He smiled and appeared unconcerned when I asked him why he struck his mother last Monday." Sometimes the refusal to answer questions is in itself important: "When asked why he refused his food and whether it was true that he thought it poisoned, he made no reply." In many cases it is desirable to tell the patient plainly that the state of his mind is called in question; this not only gives him full opportunity of objecting, but the physician is the better able to form an opinion on the mental state.

The examination of a patient should never be hurried; notes should be made at the time or immediately afterwards. It is important to be certain that the condition observed cannot possibly be due to the effect of sedatives, alcoholic intoxication, febrile delirium, or any purely temporary condition affecting the integrity of the mind. More than 30 years ago, in Scotland, I examined a newly-admitted querulous depressed patient; I had doubts about the insanity but none about a recent pneumothorax which had been overlooked.

Facts Communicated by Others.

These may be entirely omitted; and in many cases the certificate is better without them. Their insertion is necessary when the true meaning of the facts observed by the physician is not clear otherwise.

There are many important facts of which the physician may have no personal knowledge, such as the refusal of food, the existence of faulty habits, acts of violence, and much besides. The presence of delusions often cannot be asserted with confidence without information from others. The patient may declare he is utterly ruined, and if this is given as evidence of insanity it must be accompanied by a statement by a trustworthy informant to the effect that the patient's belief is not justified. The doctor himself is not likely to know the true financial position. The greatest care should also be taken with regard to delusions of infidelity, it being often impossible to ascertain the truth with certainty, and the possibility must be borne in mind that these and delusions of suspicion may have some basis of fact.

A certificate is often strengthened if it can be shown that the patient's manner or conduct has undergone a marked change. The facts observed may perhaps be excused or explained away had they been found in certain other individuals, but when they are opposed to the whole tenor of the patient's former life they are significant. Relatives can give evidence on this point. Nevertheless, a certificate must not rest on information supplied by others, however trustworthy it may be, although such information may be used to great advantage in its support.

The Wording of the Certificate.

It is by no means easy to find appropriate words. The certificate should be terse and to the point, and a long certificate is often a weak one. Nevertheless, economy in words must not leave their meaning in doubt. Many words are almost without value unless amplified or illustrated. Such words, for example, as excited, noisy, depressed, abusive, moody, taciturn, unreasonable, and suspicious may be used to describe conduct which is perfectly normal in certain circumstances. A certificate containing the statement, "He was very noisy and abusive, and called me a damned fool," was returned by the Commissioners with the stereotyped reply, "Will the certifier state some facts more clearly indicating insanity?" (!)

In the endeavour to avoid ambiguity it is undesirable to use technical terms. When they are necessary they must be explained or illustrated. For instance, if the word hallucination or delusion is used, an explicit description of the symptoms should follow. It is not enough to say that the patient suffers from hallucinations of hearing. Particulars should be given, such as, "He told me that he heard the voice of his deceased sister speaking to him last night." In some cases it is almost impossible to word a certificate so as to avoid all conceivable misunderstanding. This difficulty, however, is no excuse for the use of loose or vague expressions which give the impression of haste.

It is a good plan to write a certificate first in draft, and before copying to go through it with the thought that it may one day be produced in court, and perhaps criticised unkindly by an advocate who wishes to distort its meaning.

Other Important Points.

Attendant Circumstances.—Obviously the physician cannot put all the facts on the certificate, and in a difficult case there is no objection to his attaching to it a memorandum giving additional particulars. It should be remembered, however, that all these details have to be copied in the mental hospital and cause much extra work. In most cases it suffices to make precise notes of the attendant circumstances and pigeon-hole them carefully. Such notes are invaluable if difficulty subsequently arises. In court it seems to be assumed that a doctor can remember all particulars of a patient examined years ago, and if no records are forthcoming it is quite possible that an adequate certificate may be made to appear weak and incomplete. The admission by the physician under examination that he has forgotten some important fact may create a bad impression.

Dates.—There are three distinct situations to consider: (1) When a patient is received on an urgency order, the medical practitioner signing the certificate must personally examine the patient not more than two clear days[1] before the reception of the patient in the hospital. (2) In the case of a private patient the two medical practitioners must separately examine the patient not more than seven clear days before the date on which the petition is presented to the justice of the peace. (3) In other cases the medical examination must be made not more than seven clear days before the date of the justice's order.

It is obviously unwise to run any risks of the certificate being out of date, which will result in the patient being discharged, and consequently the examination should take place well within the prescribed period.

Minor Details.—Lack of reasonable care may easily be imputed if the certificate is incorrect or incomplete in its minor details. It is astonishing how many certificates fail to describe informants accurately or fail to give their proper addresses. Not a few contain some mistake in dates, or omit to give the full names of the patient. Marginal notes on the certification form give full particulars of what is required, and in quite 10 per cent. of the cases it would appear that they have not been carefully read. Medical men, who are chiefly concerned with the welfare of the patient, are apt to be impatient of legal formalities. But they should remember that, when the liberty of the subject is involved, accuracy in every item is imperative and none of the details required is unimportant. In any case it is unwise to ignore provisions laid down by Act of Parliament.

So far as I am aware the University of Durham is the only examining body that requires every student in his final examination in medicine actually to examine a mental case and sign a certificate in lunacy.

In conclusion, I do not think that the practitioner need have any fear of legal proceedings if he remembers that the certificate is a legal document, if he takes pains in the examination of the patient and in the drafting of the certificate, and if he makes notes at the time of the main circumstances which influenced his judgment, and, of course, preserves the notes.

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[1] The term "two clear days" is construed so as to allow two entire days to elapse between the examination and the reception of the patient. For instance, in a case of urgency the patient may be examined on a Tuesday and be received in the mental hospital on a Friday.

THE LANCET.

LONDON: SATURDAY, APRIL 12, 1924.

AMBULANCE CASES IN LONDON.

LAST June the PRINCE OF WALES, as President of King Edward's Hospital Fund for London, appointed a Special Committee to inquire and report "on the methods employed for ascertaining where bed accommodation is available at hospitals in the metropolitan and neighbouring areas for accident cases requiring admission, and on the proposal that daily reports of vacant beds should be supplied to the police and ambulance authorities, and to make such consequential recommendations as they may consider desirable." This Committee having heard representative witnesses and interpreted its duties in a liberal manner, has now issued a report of great practical interest. The Committee has been unable to discover any method by which, with the means at their disposal, the hospitals and infirmaries of London can be brought into immediate and effective contact with the urgencies of accident and illness; but it has at least pointed out some of the difficulties that beset this branch of hospital work and how they arise. The demand for inquiry was provoked by two things: street accidents in which undue delay was alleged in the arrival of ambulances after accidents; and urgent cases brought by ambulance to an institution not able to take them in, or not able to retain them for more than immediate treatment. No doubt there was frequent exaggeration in the descriptions of the circumstances—minutes feel like hours in the presence of tragedy; it is, however, beyond dispute that avoidable delay should be avoided and that cases of serious illness or injury should not be transferred from one institution to another in a vague and miserable *tournée* of disappointments. It is equally clear that the conditions of modern street traffic in a London which is crowded, huge, and rapidly extending, are largely responsible for a state of things which cannot be dealt with satisfactorily without drastic and expensive reorganisation. The Committee pointedly observes, "If we were engaged in planning an ideal arrangement for an urban community in which no previous provision existed, a scheme of suitably located casualty clearing stations adequately staffed might be devised, with motor ambulances, summonable by telephone, attached thereto, and equipped with a sufficient supply of casualty and observation beds." Even that would mean much money, but the actual circumstances to be met imply still larger sums. In order to deal satisfactorily with all sudden or accidental emergencies in the London of to-day, there must be large sums spent on providing beds, staffs, and ambulances for that express purpose, without regard to the fact that at times a proportion of such material will not be in use and will seem superfluous.

Although delay in the arrival of ambulances seems to have contributed to the holding of the inquiry, the Committee was not by the terms of its reference concerned with the question of the adequacy and efficiency of ambulance provision. It states, however, in passing that the area within the County of London, with recent and prospective additions to the service, appears to it to be well supplied, but that in the neighbouring areas there would seem to be need for better provision. The Committee had actually to inquire as to cases of inability on the part of the first institution sought to accommodate the patient brought to it for treatment, and as to other cases in which the patient had, before his cure was complete, been transferred elsewhere. This, of course, occurs in many instances in which a voluntary hospital, owing to the case not being suitable for retention in its wards, seeks to pass it on to a Poor-law infirmary which may, or may not, be willing or able to receive it. Poor-law institutions naturally have their limitations and regulations, and are primarily provided by the ratepayers of a defined area for the treatment of patients whose normal residence is within that area. The Committee therefore found itself confronted with a complicated state of things in which voluntary hospitals and Poor-law infirmaries, unsystematically scattered over the metropolis, receive under different regulations or practice cases of accident and illness occurring in streets and public places, generally handled in the first instance by the police controlled by the Home Secretary, and mostly conveyed by a municipal ambulance service. The position is complicated by diversity of practice obtaining in Poor-law infirmaries, by there being more than one ambulance service within the county, and by the police area of London covering portions of Middlesex, Surrey, Kent, Essex, and Hertfordshire outside the area of the County of London. The task of coördinating these services cannot be an easy one, and the question of ways and means for improvement must be prominent in any discussion with regard to it. The Committee is definitely of the opinion that the proposal that daily reports of vacant beds should be supplied to police and ambulance authorities is not practicable, and that even if it were so it would not prove to be of any real service or advantage.

The concrete recommendations of the Committee in the circumstances are to the effect that King Edward's Hospital Fund, in making its annual grants, should take into consideration whether hospitals, which deal with cases of accident or sudden illness occurring in streets or public places, provide a reasonably sufficient number of beds for such cases, and a reasonably sufficient number of beds, or observation beds, attached to the casualty department, in order to avoid, as far as possible, transfer to another institution of any patient whose condition might be prejudiced by such transfer. Here particular notifications to the police and ambulance authorities would be serviceable. They should be provided with lists which would indicate the institutions able to accommodate the cases in question, the lists being made up by the coöperation of the Ministry of Health in the case of Poor-law institutions and of King Edward's Hospital Fund in the case of voluntary hospitals. The intervention of the Minister of Health is considered necessary clearly in order to secure funds where needed, in cases where the Poor-law infirmary might consider the patient not to be entitled to its aid at the expense of the ratepayers who provide the institution; for the Committee advises that in the cases under consideration, including cases transferred, no question should be raised by the infirmary as to the place of residence of the patient, as to where the accident took place, or as to the site of the transferring hospital; in other words, the charge for treatment of such cases should be a common Metropolitan one, and should not fall on the union receiving and treating such patients. A further very proper recommendation is to the effect that no disability should arise out of technical pauperisation through a patient of the class indicated being treated in a Poor-law institution. The recommendations made therefore may be summed up as advising the use side by side of beds in voluntary hospitals and Poor-law infirmaries for the reception of accident cases and cases of illness occurring suddenly in public places, with recognition of the difficulty in present circumstances of keeping vacant at all times beds for the reception of such cases. There is further recognised the fact that the prolonged treatment of all cases brought to a hospital by ambulances is not possible consistently with the hospital rendering the best service possible to the community. Some cases have to be transferred to Poor-law institutions in order to make room for patients who will find their best hope of recovery in the hospital, or whose condition renders them best adapted for the purposes of a hospital where there is a medical school. That transfers are not to be made where the patient is likely to suffer in consequence follows as a matter of course.

The report of the inquiry, in the course of which the closing of wards for lack of funds at some hospitals was mentioned, should go far to convince the public that only want of money prevents the hospitals of London from performing to the full their share in the task of providing for street accidents. To keep vacant beds for accidents which may not occur must risk the withholding of hospital treatment for a person who without it will have no chance of recovery, although his or her condition is not due to accident. It seems clear, therefore, that beds for accidents must be provided specifically and kept vacant for that purpose alone. The hospitals ask, "Who will provide them ?"

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ALCOHOL AND LONGEVITY.

In the new edition of the official publication on "Alcohol and its Effect on the Human Organism"[1] each chapter has been subjected to revision, a new chapter on alcohol as a medicine has been added, and the publication can claim to comprise in nearly every particular a dispassionate and judicial summary of the drink problem on its scientific side. It can scarcely claim the remarkable lucidity of exposition of Prof. E. H Starling's book on "The Action of Alcohol on Man," though it is well written; but it purposely avoids appeal to other than scientific considerations; and in its preface, referring to Prof. Starling's discussion concerning the social value of alcohol, the very proper comment is made that these discussions "are at present, and are long likely to be, matters for individual judgment and opinion rather than for scientific decision." In this wider world, the man in the street, the social worker, or the hygienist anxious to remove one of the most serious causes of poverty and sickness as well as of vice and crime, is as much entitled to a hearing as the physiological investigator. The chapter in the new edition likely to be most discussed is that dealing with the influence of alcohol on longevity. Until recently the discussion on this point has turned chiefly on the experience of the United Kingdom Temperance and General Provident Institution. This experience showed that among males insured for whole-life policies 26·4 per cent. fewer deaths occurred among the abstainers than would have taken place had they died at the rate observed in the class of non-abstainers. This was so, although the non-abstainers had a mortality almost identical with that of the average of persons insured in 23 British offices. There are many causes besides alcoholic habits which may have contributed to this difference, and on the whole the matter is fairly summarised in the chapter in question, although everyone may not agree with the cautious decision that "we cannot regard the experience of the office as conclusive," especially in view of the full actuarial details given 20 years ago by Mr. R. M. Moore.[2]

New matter in this chapter embodies a summary of Prof. R. Pearl's contribution to Prof. Starling's book. This gives evidence based on a continuous record of the alcoholic habits of some 2000 persons in Baltimore, who had died after reaching the age of 20 years. These persons were classified into (1) total abstainers throughout life; (2) moderate or occasional drinkers, including persons who might only very occasionally take a single glass of beer or wine; and (3) heavy or steady drinkers, including both drunkards and daily steady drinkers in however moderate amount; and it was found that the mean age at death among male members of group 1 was 60·05 years, of group 2, 61·04 years, and of group 3, 55·37 years. We share the regret expressed in the Medical Research Council's booklet that Prof. Pearl adopted the above method of classification, "which deprives us of nearly all the benefit which we had hoped to derive from his admirable material." No one would argue that an occasional glass of wine or beer would appreciably shorten life. On the other hand, no one doubts that intemperance shortens life. What we really need to know is whether the daily moderate (carefully defined) use of alcohol influences duration of life. As stated in the chapter from which we quote, the real problem is, "are a daily pint or two of beer or a daily bottle of claret, or a few glasses of whisky-and-soda per diem harmful ?" and family histories carefully collected ought to throw light on this question. But at this point doubt is raised as to whether the "material," the statement of which, with less interesting statistical material, fills about one-fourth of Prof. Starling's work is "admirable"; and severe criticism of its value is comprised in a recent article[3] by Prof. Harald Westergaard, the distinguished statistician of Copenhagen, which has reached us. Prof. Westergaard points out that the Baltimore statistics deal only with the persons in the experience collected who had died, and take no account of those still living, thus ignoring the greater part of the total persons at risk in the experience. On this basis Prof. Pearl is obliged to assume that the mean age at death of persons in each of his three groups who have died at ages 20 and over gives a fair basis of comparison between these groups. But, even if on other grounds this method of statement were wise and trustworthy, a preliminary objection to it arises. In view of the steadily increasing temperance propaganda younger men are likely to be total abstainers in larger numbers than older men; hence it follows that, other things being equal, deaths among total abstainers will be at an earlier age than deaths among non-teetotallers. This makes it all the more noteworthy that with such a test the vitality of abstainers should have been greater than that of steady drinkers. The method in itself is, however, essentially unsatisfactory. It is described by Prof. Westergaard as "quite obsolete and misleading." Many years ago an investigation by the same method undertaken by the British Medical Association showed a mean age at death of abstainers of 51 years and of the habitually intemperate of 63 years; and official disclaimers against the obviously illegitimate inference drawn from these figures did not prevent their display in public-house windows as valid evidence that drunkards live longer as well as merrier lives than teetotallers!

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[1] Alcohol and its Effect on the Human Organism. New edition, revised by the Medical Research Council. H.M. Stationery Office. 1s.

[2] Journal of the Institute of Actuaries, Nov. 30th, 1903.

[3] Reprinted from the International Review against Tuberculosis, 1924.

The same method was exposed repeatedly by **WILLIAM FARR** in the early reports of the English Registrar-General. It is a method which, by using illustrations, **FARR** reduced to absurdity. The mean age at death, he remarked, is not a factor to be trusted; for were this test accepted—as he wrote in the Fifth Annual Report of the Registrar-General—it would be necessary on behalf of the young but early dying cornets, curates, and barristers "to make them generals, bishops, and judges for the sake of their health." Although the Baltimore figures do not diverge widely from what were probably the actual facts—like the extreme illustrations cited above—confidence cannot be accorded to results thus obtained. The right method of investigation is to observe a certain number of living people during a certain number of years, which can be done retrospectively, the fate of each person whether dead or still alive being set down, and death-rates recorded from which, if desired, the actuarial expectation of life can be calculated. Our knowledge has not been increased by the Baltimore figures, and they lend themselves to misleading quotation. The experience of insurance societies, when fully analysed, points to the superiority of the life-prospects of teetotallers over moderate drinkers, among whom there would admittedly be a small proportion of intemperate persons. This experience should be considered in conjunction with the physiological and pathological facts as to the action of moderate doses of alcohol, given both in the publication of the Medical Research Council and in Prof. **STARLING**'s book, when the conclusion will be justified that abstinence from alcohol is a valuable means for prolongation of life and promotion of efficiency.

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THE SIZE OF INFECTIVE VIRUSES.

THE attempts which have been made from time to time to simplify the administration of fever hospitals by one or another form of "bed-isolation" have led to information which is of some interest in connexion with the question of the unidentified (or, at any rate, unseen) agents which cause some of our common infectious diseases. Chicken-pox needs a barrier of the order of the wall of a room, measles spreads easily from bed to bed; in both cases the volatility of the infection is greatest in the first two or three days. Everything else seems fairly safe to manage in a common ward with not too much crowding and a well-trained nursing staff. One thing is certain—that there must be plenty of room. The density of the infectious agent may be assumed to vary inversely with the square of the distance from its source. Under conditions of serious overcrowding, diphtheria, meningitis, and influenza will spread quite freely, whereas under reasonable conditions of space they are by no means highly catching. Apart, however, from this circumstance, the facts suggest several possibilities about the nature of the viruses. It may be that the cause of chicken-pox is viable for a longer time outside the body than that of scarlet fever; of known pathogenic bacteria the gonococcus is an example of how little a complete parasite may be able to tolerate the conditions in the outside world. But other evidence is against this being an important factor, since there are good grounds for believing that the cause of scarlet fever may live outside the body in an infective state for at least several days, and less frequently a prelude to infection than with chicken-pox.

Size of the virus may be an important consideration. It is a striking thing that the two diseases of known ætiology which are caught so frequently by those who work with the bacteria that a practical nuisance arises—Malta fever and tularæmia—are both caused by exceptionally small, though plainly visible, organisms. Rocky Mountain fever and typhus are quite dangerous too, but in both there is a special insect vector as well as a very small organism. From which we get support for the idea that the causes of chicken-pox and measles are also very small—much smaller, that is, than bacteria like the diphtheria bacillus or the meningococcus. In the case of measles, at any rate, there is other evidence that the cause is small or has a small phase in its life-history. The floatability or volatility of particles obviously depends greatly on their size and specific gravity. The latter is presumably not very widely different through the whole series of live organisms. Down to a diameter of about 1μ particles in air behave like pieces of solid matter. The limit of microscopic vision is somewhere about 0·25μ, and a particle as small as 0·1μ has so much surface relative to its mass that its properties are no longer directly in line with those of similar larger bodies. It fails, for example, to obey Stokes's law for falling bodies, which is direct evidence that it would be particularly liable to float about in air even longer than would be expected from its size. It is quite unknown how big the invisible viruses which will pass the pores of a fine porcelain filter really are. Experiment indicates that some of them are no bigger than a molecule of hæmoglobin—an almost incredible conclusion. But if they were ten or a hundred times larger they would still have an exceptional carry through the air. When the viruses are known and measured, it will be interesting to see whether the possibilities of bed-isolation can be calculated in terms of colloidal ballistics.

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GLASGOW ROYAL INFIRMARY: THE LISTER WARD.

THE demolition of the old block of the Glasgow Royal Infirmary, of which the Lister Ward forms the ground floor, is proceeding apace, but the lay press of Glasgow continues to pay considerable attention to the whole question of the retention of the fabric. On March 26th the Presbytery of Glasgow passed a motion "strongly protesting against the proposed destruction of the ward, and expressing the hope that it may be possible to retain it as a memorial of Lord Lister and his great work in the infirmary." A similar protest has been made by the employees of at least one large city firm; and protests from interested individuals have been numerous. The level of the adverse criticism shown in these discussions and letters has been very uneven, and in some cases quite different issues have been introduced and discussed. The managers of the infirmary, however, continue to pursue the policy upon which they originally decided, and which was ratified at the annual meeting of subscribers. It has been suggested that their refusal to be influenced by the press and scientific and corporate bodies must have an adverse influence upon the income of the infirmary. We cannot think that this will be so. The routine work of a great infirmary must go on, and to curtail its beneficent activities by wilfully reducing its income would seem to us but a poor way for those who disagree with the managers to show their displeasure.

Annotations.

"Ne quid nimis."

PROVISION FOR DEFECTIVE CHILDREN IN LONDON.

The Education Committee of the London County Council have published a descriptive pamphlet [1] explaining the variety and nature of the provision offered for the education of defective children of all kinds. This provision has steadily increased since the commencement made by the old School Board for blind and deaf children in 1893, and it now covers all forms of disability. Experience has shown that difficulty still arises from the lack of public information on this subject; sometimes children who could benefit fail to attend as early as might be wished owing to their parents and advisers being unaware of the existence of educational facilities other than those of the ordinary elementary school. The special schools also serve as a link in the chain of after-care and medical or surgical supervision. The care committee organisation attached to each school endeavours to ascertain through the hospital almoners the frequency with which the members of the clinical staff wish to see their patients so as to secure their attendance at the prescribed times. Also they arrange that after periods at convalescent homes or residential institutions the children shall resume attendance whenever necessary at their hospital of origin, thus diminishing the change of venue which is often a source of confusion. While in the schools the children are under the supervision of a specialist medical staff who see them from time to time and advise as to return for treatment. In the intervals any child can be seen by a member of the general staff of school doctors. This procedure has the advantage of securing the return for treatment in many cases in which the parents, left to act on their own judgment, might delay longer than is advisable. The curriculum at each type of school has been thought out specially to meet the difficulties of particular defects and to prepare, at the later ages, for some definite occupation; while the after-care committees assist in placing out former pupils and in keeping a general supervision over their welfare up to the age of 18. In the case of the schools for cripple children, conveyance by ambulance from the home to the school and back is arranged and a fully trained hospital nurse is in attendance throughout the school hours. Children are admitted to special schools only on the certificates of medical officers on the staff of the Public Health Department of the L.C.C. who have been recognised by the Board of Education for the purpose, and to whom all information received is transmitted. We understand that Sir William Hamer, school medical officer for London, welcomes the fullest coöperation with hospital staffs and would gladly exchange information with regard to children or receive suggestions for their welfare emanating from the physicians and surgeons under whom they have been treated. An appendix to the pamphlet gives a reference list of the special schools, nearly 200 in number, which form part of the L.C.C. education service.

PARTIAL GASTRECTOMY: A RETURN TO BILLROTH I.

It is becoming increasingly evident that medical science is in danger of over-specialisation; the various branches are developing more and more into watertight compartments, and the student on completing his preliminary studies is apt to regard them with a sigh of relief as a closed book. Anatomy and physiology are forgotten, while surgery is proceeding along the lines of brilliant technical achievements rather than upon the conservation of function. No better example is needed than the surgery of the stomach. In the collected papers of the Mayo Clinic, Vol. XIV.,[1] an extensive section is devoted to the surgery of the stomach, and there are many papers on gastric and duodenal ulcers and carcinoma, which must prove of great value to any surgeon who is confronted with these conditions in his routine work. The history of the treatment of the peptic ulcer is probably more remarkable than that of any other single condition. For many years the discussion has continued, and as time passes the question of the treatment of the peptic ulcer provides an evergreen subject for the programmes of the greater and the lesser medical societies. The surgeon having in any given case persuaded himself and the physician and the patient that active surgery alone holds out any hope of permanent cure, is then confronted with a bewildering variety of methods, the gradual trend of opinion being in favour of certain operations of greater and greater magnitude. The conclusion must be fairly obvious, for the very complexity of the whole subject surely points to dissatisfaction with the results. It is now conceded by the majority of serious surgical investigators that no one method is applicable to ulcers of every type and in every situation. This point of view is admirably dealt with by William J. Mayo in his paper on Radical Operations on the Stomach. There is no gainsaying that many ulcers and many carcinomata of the stomach will demand a partial gastrectomy. It will be remembered that the early cases of this operation were invariably completed by an end-to-end anastomosis of the stomach and duodenum, the pioneers in this work being Pean (1879), Rydygier (1880), and Billroth (1881). The anatomical conditions imposed upon these surgeons the problem of anastomosing a duodenum of small calibre to a much larger stomach. The disparity in size was reduced by stitching up the stomach until an area was left corresponding in size to the cut end of the duodenum. The result was the production of the "fatal suture angle" which in itself was sufficient to cause this operation, which had come to be known as the Billroth I. operation, to fall into disfavour and even into disuse.

Simple gastrojejunostomy, the Polya and Billroth II. methods of partial gastrectomy, are admirable technical achievements and are undoubtedly demanded by certain anatomical and pathological conditions, but it cannot be denied that they result in grievous disturbances of physiological function. The return to the Billroth I. operation is a return—as near as may be—to physiological conditions, and its steady restoration to favour is an indication that the surgical profession as a whole is alive to the evil results of the severe impairment of gastric function. It only remains to prove that the original defects of this operation have been overcome and to appreciate how this result has been achieved. Shoemaker has demonstrated that under modern technique leakage does not occur at the suture angle, and that quite a large extent of the lesser curvature and the pylorus can be removed, at the same time leaving a large area of stomach behind, permitting an end-to-end anastomosis of stomach and duodenum. Mayo emphasises the vital importance of the thorough mobilisation of the lesser curvature, and draws attention to one serious complication—viz., the dropping back of the stomach to the left of the spine—thereby putting an undue strain on the anastomosis, and impeding gastroduodenal drainage. He points out that this may be overcome by fixing the anterior wall of the stomach to the suspensory ligament of the liver in such a way that the anastomosis is firmly anchored to the right of the spine. With attention to such details of technique, Billroth I. has once again become the operation of choice, and has in addition this great point in its favour, that the normal physiological and anatomical conditions are reproduced as nearly as is compatible with the removal of the damaged area. In those cases, however, in which too large a portion of the stomach has to be removed, as in some cases of carcinoma, then the nearest approach to the restoration of physiological conditions is Moynihan's modification of the Polya method.

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[1] London County Council: Notes on the Provision made in London for the Special Education of Ailing or Defective Children, from a Medical Point of View. P. S. King and Son, Ltd. 3*d*.

[1] London and Philadelphia: W. B. Saunders Co. 1923. Pp. 1394. 63*s*.

BROKEN GLASS AS A POISON.

RECENT correspondence in *Municipal Engineering* has voiced the anxiety of its readers in regard to the presence of broken glass in their food, the possibility especially of appendicitis and cancer arising being emphasised. No doubt the frequency of these two diseases affords the reason for their rather arbitrary selection. We are not prepared to deny that broken glass can produce appendicitis, as the multitudinous variety of foreign bodies found in an inflamed appendix includes glass particles, but to suggest broken glass as a common cause of appendicitis lacks foundation entirely. As a cause of cancer broken glass is not worthy of discussion. Judging from this correspondence, however, the use of glass containers for sterilised food is on the increase, and certain results are known to follow. 1. As one manufacturer of jam points out, bubbles of air in the wall of the glass container, especially if close to the internal surface of the jar, may burst, causing flakes of glass to become detached and pass into the food when it is poured hot into such a jar. 2. Glass jars are moulded by machinery, and when the two halves of the mould do not fit tightly together glass is squeezed out into thin plates at the seams. When hot food is poured into such jars, these plates of squeezed-out glass become detached. 3. During the pouring of the hot food into the jars—which are often of inferior glass—the whole container may fly, and the food, instead of being discarded, is strained through sieves which do not prevent the smaller particles from passing through with the food. Regarding the alleged poisonous effects of powdered glass, it is not without historical interest to note that Dr. W. Johns, F.R.S., writing in THE LANCET of Feb. 19th, 1825, recommended the use of pulverised glass as an efficient vermifuge. In his article he stated that he had used this substance for many years on children and adults with uniform success, giving two scruples every day for a week, followed by calomel for children. In the Middle Ages powdered diamonds were used to produce sickness and death, and Benvenuto Cellini in his autobiography records that such an attempt was made on him, but the individual instructed to powder the diamonds substituted another substance so that no ill-effects resulted. Coming to more recent times, in the Baroda case diamond dust was administered with arsenic in sherbet. The effect of swallowed glass depends, of course, upon the size and sharpness of the particles—a large fragment will produce the same symptoms as any other sharp foreign body; the fine particles appear to have very inconstant results. On the one hand, there are authentic records of professional glass-eaters who have practised many years for gain; ultimately, as far as is known, these succumb to the effects of their calling, usually from some form of gastro-enteritis. Their feats are generally performed on a full stomach. On the other hand, in India powdered glass is not infrequently administered both to human beings and to cattle with intent to kill—in either case with some success. Glass bangles obtained from the bazaar and powdered have been administered in curry, and in some Oriental cities rat-catchers are said to employ this substance for destruction of vermin. In this country the employment of powdered glass is very rare, but recently it has been mentioned twice. In one case the food with which it was mixed was not eaten, and in the other case the employment was suggested, but there was no proof that it was ever used. The symptoms produced by powdered glass are in the main due to damage to the mucous membrane of the alimentary canal, and resemble those of gastro-enteritis. Pain may or may not be present. There is usually nausea and vomiting, and the vomit is often streaked with blood. Passage of the stool is painful and the fæces may contain blood. Perforation of a viscus has occurred. If the patient recovers—and the majority do recover—a chronic gastro-enteritis may ensue. The post-mortem appearances have shown considerable inflammation of the alimentary tract, with erosions, ulceration of the organs, and a considerable quantity of blood mixed with the contents. In cases where suspicion arises, great care must be taken to distinguish small particles of glass, and any organs reserved should not be placed in glass vessels. Analysis for powdered glass is simple; the organs are treated with hydrochloric acid and potassium chlorate, whereby the organic matter is destroyed and goes into solution, whilst any glass present is untouched. Filtration and examination with the naked eye or microscopically will then reveal the presence of particles to which confirmatory tests can be applied. With regard to the use of glass containers for food products, we recently pointed out their inferiority to metal containers in the matter of ready sterilisation; tins can more readily be made air-tight. Greater trouble in transport, loss from breakage, and the risk, whatever it may be, from ingestion of broken particles, may well turn the scale against the use of glass for food containers in this country.

PRE-OPERATIVE DIAGNOSIS OF EMBOLISM OF A RENAL ARTERY.

SOMETIMES logical reasoning and sometimes happy intuition which is little more than a guess, give a surgeon the clue to the correct diagnosis in a difficult case. The following case illustrates the felicity of a combination of clear reasoning powers with what can be best described as an inspiration. One morning Prof. P. Bull, who tells the tale,[1] found in his wards a woman, aged 35, who had been admitted on the previous day with the diagnosis of "acute abdomen." She was a domestic servant who gave no history of heart disease, rheumatic fever, or other illnesses, and who had been seized on the evening previous to her admission to hospital with violent pain in the upper abdomen. The following night was spent in pain and incessant vomiting. When examined next morning her medical attendant found rigidity and tenderness in the upper abdomen, and he very naturally suspected perforation of a gastric ulcer. In hospital the rectal temperature was found to be 38·1° C., the pulse 64, the respirations 28. A faint presystolic murmur was heard over the apex of the heart, and the second pulmonary sound was accentuated. The tenderness in the upper abdomen was greatest under the left costal arch. The catheter urine showed no pus cells, blood cells, or casts. The last menstruation had occurred five weeks earlier. These were the salient features presented to Prof. Bull when he first saw the patient, and when he proceeded to discuss with a class of students the differential diagnosis. As he ran over the various possibilities such as perforated gastric ulcer, intestinal obstruction, renal calculus, the suspicion suddenly occurred to him that the presystolic murmur and the sudden, acute abdominal pain might be relevant to each other. Wondering if the heart disease might not have given rise to embolism of the left kidney or renal artery, he catheterised both ureters and found that the left kidney had practically ceased to function. The injection of indigo-carmine told the same tale, and while the specific gravity of the few drops of urine drawn from the left kidney was only 1013, it was 1023 on the opposite side. With this and other evidence to support his diagnosis of embolism of the left renal artery, he performed nephrectomy and found the three main branches of the renal artery blocked by emboli, and the kidney itself mottled and the seat of numerous large infarcts. Death occurred suddenly 16 days after the operation, and again Prof. Bull scored a diagnostic success. He anticipated and found at the post-mortem examination that the mitral valve was obstructed by a large thrombus which had evidently become detached from the left auricle immediately before death. Thanks to the care with which the necropsy was performed, this thrombus was given no chance to slip back into the left auricle and thus puzzle all concerned as to the part, if any, it had played in causing the patient's sudden death.

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[1] Norsk Magazin for Lægevidenskaben, March, 1924.

DRUG IDIOSYNCRASY, WITH SPECIAL REFERENCE TO ADRENALIN.

THE term "idiosyncrasy" used in connexion with potent drugs denotes an imperfectly comprehended phenomenon. For example, a dose of chloroform which can be inhaled with safety by one individual will produce in another alarming or even fatal symptoms; the nature of these, ventricular fibrillation or vagal inhibition, may be demonstrated, but we have not the slightest knowledge which helps us to determine why the symptoms arise in one case and not in the other. The interesting communication from Dr. H. E. Symes-Thompson on p. 743, draws attention to idiosyncrasy in connexion with adrenalin and conveys a warning that may well be heeded. Adrenalin used in association with local anæsthetics is often not given credit for all the powers which it possesses. There has come down from the cocaine era a tendency to lay at the door of the local anæsthetic employed the blame for distressing symptoms which are actually due to the adrenalin injected and not to the anæsthetic. As long ago as 1910 Fröhlich and Loewi showed that intravenous injection of such a dose of cocaine into an anæsthetised cat as was by itself without effect produced a striking change in the pressor effect of a small dose of adrenalin. Before cocaine, 0·1 mgm. adrenalin produced a rise of pressure from 76 mm. to a maximum of 120 mm., having a duration of about two minutes; following 5 mgm. cocaine, the same dose produced a rise from 50 mm. to 140 mm., maintained during five minutes. Last year Sternberg showed that the same phenomenon followed the injection of novocaine and alypin, and he made it thereby clear that the action of cocaine was possessed by several local anæsthetics and was not dependent on some precise chemical structure. Another quite unlike substance having a similar effect is pituitary extract; when the rise of blood pressure produced by its injection in the pithed cat has passed off the effect of adrenalin is again much greater than before. More profitable comment may be made on the symptoms produced in the clinical cases recorded. It is natural to think that the effect of adrenalin is exerted peripherally and that the heart "consciousness," rise of blood pressure, sweating, and so forth, result from stimulation by the adrenalin of the sympathetic nerve-endings. It is unlikely that this is the case. In the cat an intravenous injection of adrenalin produces sweating on the pads of the feet, but not if the peripheral sympathetic nerve has been cut. Hence in this case the action of the adrenalin must be central rather than peripheral, and the stimulation it produces may follow as a consequence of central anæmia produced by the vaso-constriction. The possibility that idiosyncrasy to adrenalin is related to excessive thyroid activity also has experimental support, and as the evidence for an inter-relation becomes quantitative it becomes more acceptable. Holm and Bornstein have recently showed, for example, that the rise of blood-sugar produced by a dose of adrenalin in the rabbit is much less after thyroidectomy. All this points to the desirability of using adrenalin in very minute amounts, or, rather, in very dilute solution. Braun, whose authority in this matter is unimpeachable, regards a strength of 1 to 100,000 or 1 to 200,000 as the proper dilution for use with local anæsthetics. It is probable that in cases of dental extraction a dilution much less than this is often employed. The especial risk of adrenalin injection in association with light chloroform anæsthesia is now, of course, well recognised. When the two drugs are to be employed in the same case the injection must be made before the anæsthetic is begun or else after the patient is in deep narcosis. Whether suprarenin, a synthetic product, or adrenalin, the organic extract, is employed does not necessarily make any difference, for some of the suprarenins manufactured are equal in potency to natural adrenalin.

POST-SEROTHERAPEUTIC AMYOTROPHIC PARALYSIS.

THE list of sequels to the injection of a serum is already fairly long, and it has hitherto been customary to classify them in two main groups, according as they are early or late. Anaphylactic shock, for example, is an early sequel, whereas a rash, pain in the joints, albuminuria, œdema, myalgia, diarrhœa, and vomiting are a few of the many comparatively late sequels. Common to both groups is the fact that, provided the patient does not succumb at once, these reactions are only transitory, no permanent injury being inflicted. Unfortunately, the condition described as post-serotherapeutic amyotrophic paralysis is distinguished from the well-known sequels to serotherapy by its obstinacy, not to say permanency. Dr. J. Lhermitte records in detail[1] three cases observed during the war. The patients were soldiers given subcutaneous injections of antitetanic serum soon after being wounded and as a routine prophylactic measure. In no case could the dissociated amyotrophic paralysis of the brachial plexus which ensued be traced to the wounds for which the serum was given, nor to syphilis nor rheumatic disease of the vertebral column. The paralysis developed on the fourth, fifth, and eighth day respectively after the injection. The muscles involved were those of the shoulder and upper arm. The onset of the paralysis was associated with acute pain in the scapular and shoulder regions, but the pain passed off without leaving any tenderness on pressure over the branches of the brachial plexus or sensory disturbances. Apart from the amyotrophic condition, there was no trophic disturbance with the exception, in one case, of hypertrichosis of the posterior surface of the forearm. The paralysis did not pass off completely, and the amyotrophic condition seemed to be more or less permanent. After reviewing the recent literature on the subject, Dr. Lhermitte notes as significant that, with the exception of a single doubtful case in which antidiphtheritic serum was given, the cases hitherto recorded arose in connexion with the administration of antitetanic serum. This observation would suggest that antitetanic serum may, under certain conditions, have a toxic affinity for the nervous system whether the patients injected have, or have not, been sensitised by previous injections. The cases of amyotrophic paralysis observed in connexion with injections of antitetanic serum are obviously so rare that, interesting as this condition is, there is no need to regard it as an indication to withhold specific serum treatment in a case likely to have been infected by the tetanus bacillus.

THE PIRATES' WHO'S WHO.

IN this amusing book[2] Dr. Philip Gosse gives particulars of the lives and deaths of the well-known pirates and buccaneers whose names occur in history, romance, or both; in the latter case the achievements not always being borne out by Dr. Gosse's well-documented little biographies. Kidd, to whose terrific exploits the hidden treasure in the adventure story so often owes its accumulation, appears to have been not only a third-rate performer along incorrect lines, but largely a lawful and legal privateer, who was made the scapegoat of patrons like the first Earl of Bellamont (not Bellomont as in the book), the Duke of Shrewsbury, and other highly-placed persons with a keenly developed money sense.

Who is to be described with accuracy as a pirate is considered by Dr. Gosse in an informing preface, and the difficulty is apparent when we find Paul Jones included in the piratical book of reference, though with the statement that no one would to-day call him a pirate, and Sir Francis Drake excluded, though the author admits that he cannot exactly remove his earlier exploits from the designation of piracy. A piquant little biography is that of Captain Ben Johnson, the English midshipman, who deserted in the Red Sea, and proved so clever a sailor that he became admiral of the fleet of 14 vessels belonging to the Sultan of Ormuz. Johnson became a convert to Brahmanism, collected a crew of Englishmen round him of similar flexible religious tenets, held up English shipping, sacked towns, raided temples, and took vast plunder back to his oriental employer. But wearying of service he decided to strike out for himself, and ran away with the best vessel in the Ormuz fleet, a selected crew, and some £800,000, with which he reached Constantinople in safety. Indeed, he was received with acclamation, was made a Bashaw, and, says Dr. Gosse, "at the end of a long life of splendour died a natural death." Two of the longest biographies are those of Sir Henry Morgan and Captain Misson, both of which illustrate the broad range of the subject. Sir Henry Morgan was certainly a buccaneer, but he was also a privateering organiser with a legal status, which was afterwards recognised by his knighthood and appointment as deputy governor of Jamaica. Captain Misson was a religious and chaste pirate, who was for a time broken-hearted at the "death" of the captain of an English vessel from which he had taken £60,000; he married a native of the island of Johanna, a sister of the local queen, and founded a colony on socialistic lines of which he was elected Lord Conservator. He was a moral and religious person, and seems to have deserved better of fate than to be driven into the sea by the natives who rose against being conserved.

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[1] Paris Médical, March 8th.

[2] London: Dulau and Co. 1924. Pp. 238. 10*s*.

There is a considerable literature of piracy to which Dr. Gosse calls full attention, but many of the volumes are rare and difficult to come by, consequently this alphabetical list will be found very useful. The author is to be congratulated on the original form in which he has given shape to his studies.

INFECTIOUS SCLEROMA IN CZECHO-SLOVAKIA.

IN a recent communication to the Committee of the International Office of Public Health, Dr. Joseph Cisler, professor of rhino-laryngology in the Czech University of Prague, stated that scleroma of the nose and throat was more frequent in Czecho-Slovakia than in Western Europe, and was steadily increasing in frequency. Of 75 cases of which he had received reports from various otological, laryngological, and dermatological clinics throughout the Republic, 53 had occurred in Bohemia, 14 in Moravia, 6 in Slovakia, and 2 in Subcarpathian Russia. The chief country of origin of scleroma is Poland, from which the disease has extended westwards to Silesia, Moravia, and Bohemia, southwards to Hungary, Croatia, Styria, and Carniola, eastwards to Russia, in the north-east to Lithuania, and in the north-west to Prussia. Poland, however, is not the only source of scleroma, as sporadic cases have been seen in all parts of the world, including Switzerland, Southern Italy, where it is endemic, Spain, Egypt, India, Japan, Oceania, and North and South America. The question of infection and contagion has not yet been satisfactorily settled, as the disease has not been experimentally inoculated into man or animals. Several cases, however, have occurred in the same family, and the fact that soldiers contracted the disease in Poland and Russia during the war is further evidence of its infectious nature. Of Dr. Cisler's 75 cases 36 were in men and 39 in women; the ages ranged from 16 to 69. Although formerly scleroma occurred only in the lowest classes of society, the rich are not exempt, as three cases in the present series were in well-to-do persons. The progress of the disease is very slow. The prognosis depends on the extension of the morbid process to the lower respiratory tract. Death was usually due to pneumonia, but in some cases which ran a rapid course the cause of death could not be discovered and was probably asphyxia. Treatment consists in systematic dilatation of the affected parts. Owing to the infective character of the disease vaccine treatment with Frisch's rhinoscleroma bacillus has been employed. Vymola has found that vaccination of this kind prevents the formation of fresh infiltrations. The more recent the lesions the more certain is the curative effect of vaccine treatment.

SARCOMA OF THE PENIS.

Dr. James J. Joelson,[1] of the Urological Clinic of the Peter Bent Brigham Hospital, Boston, who records an illustrative case, states that only 35 examples of sarcoma or endothelioma of the penis could be found on careful examination of the literature. One of these was described as a fibro-cellular tumour, 2 as fibro-sarcomata, 2 as spindle-cell, 4 as mixed-cell, 7 as round-cell sarcomata, 8 as melano-sarcomata, and 9 as endotheliomata, while 2 were not classified. The great majority occurred in men of the cancer age, but four were in younger adults, one in a boy of 8 years and two in infants. The commonest symptoms were pain in the penis or perineum, dysuria, and occasionally acute retention of urine. Most of the cases of endothelioma had priapism. Dr. Joelson has classified the cases into four groups according to their degree of malignancy. In the first group, which are the least malignant, the tumours do not metastasise freely, but tend towards formation of local recurrences which arise from the corpora cavernosa, less often from the sheath of the penis than from the erectile tissue. The second group, consisting of round-cell sarcomata, the great majority of which originate from the corpora cavernosa, are more malignant than the first group and show earlier and freer metastases. The third group, consisting of melano-sarcomata, though they metastasise freely, do not grow as rapidly as round-cell sarcomata. In all these cases the tumour arises at the distal end of the penis either in the glans or the prepuce. In the fourth or largest group, which consists of endotheliomata, the tumours are very rapid and malignant in their growth. Dr. Joelson's case, which occurred in a man aged 57, was an example of the second group, the tumour being a fibro-sarcoma of two years' duration, in which two local excisions and a biopsy had been performed. No evidence of metastases was apparent. Eight months after complete extirpation of the penis with dissection of both groins there was no evidence of recurrence or metastasis.

THE house and library of the Royal Society of Medicine, 1, Wimpole-street, London, W., will be closed from Thursday, April 17th, to Tuesday, April 22nd, both days inclusive.

WE regret to announce the death in London on April 6th of Dr. Alexander Haig in his seventy-first yeai. Some 40 years ago Dr. Haig's name became a household word in connexion with the part played by uric acid in the causation of disease.

AT the Council election next July of the Royal College of Surgeons of England there will be three vacancies, and the names of the eligible Fellows who are candidates follow in order of seniority: Mr. W. McAdam Eccles (formerly a member of the Council), Mr. W. E. Miles, Mr. H. J. Paterson, Mr. T. P. Legg, Mr. A. H. Burgess, Mr. Victor Bonney, Mr. Wilfred Trotter, Mr. Philip Turner, Sir Charles Gordon-Watson, Mr. Hugh Lett, and Mr. G. Grey Turner.

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[1] Bulletin de l'Office Internationale d'Hygiène Publique, 1924, xvi., 60–69.

[1] Surgery, Gynecology, and Obstetrics, February, 1924.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXVI.—THE TREATMENT OF HÆMORRHAGE FOLLOWING TOOTH EXTRACTION.

It is time that the procedure adopted for hæmorrhage in general surgery should be applied to a similar condition following the extraction of a tooth. The usual description of the condition given by the patient conveys the impression of great discomfort and anxiety. The bleeding had "lasted all night," and, in spite of keeping quiet by lying down and making applications of cold water or styptics of different kinds, large clots of blood formed in the mouth, and blood and saliva, the latter increased in quantity, continued to flow from the mouth, soaking many handkerchiefs (the number of times being given); sometimes there is given a volumetric measurement of the amount of blood presumably lost—e.g., "at least a pint."

The Disadvantages of "Plugging the Socket."

The doctor is sent for, and, finding further local applications such as adrenalin and ice useless, feels compelled to adopt the classical method of treatment by "plugging the socket," a procedure he delays for as long as possible on account of the great pain and discomfort caused. At first it not infrequently fails, and the operator, thinking perhaps it is due to tender-heartedness on his part, or to the want of courage on that of the patient, makes a more heroic attempt. In due course the hæmorrhage is arrested, usually with considerable injury to the parts involved; more often than not a varying degree of necrosis results, the soft tissues become swollen, and there is practically always some sloughing. Such a picture may be regarded as an exaggeration, but from a considerable experience I venture to state that it is not uncommon, and my object in setting it out is to raise a protest against the method of plugging the socket in general use.

Precautions in Extraction.

In considering the question of treatment, it is necessary to determine what are the causes of the hæmorrhage, how it can be prevented, and if it occurs, how it can most easily be arrested. It practically never occurs if a tooth be extracted without laceration to the soft parts or fracture of the alveolus—the first principle, therefore, is to extract the tooth with as little damage to the tissues as is possible. An error, I believe, has been committed in teaching dental and medical students, by emphasising an outward movement during extraction, which frequently leads to fracture of the outer alveolar plate. It would be more correct to urge a loosening of the tooth, and then its withdrawal in its long axis. If, however, the character of the tooth is such that this method is impossible, and the alveolus is broken, the question of possible hæmorrhage should immediately arise in the mind of the extractor. Should it occur, the general surgical principle laid down of determining where the bleeding-point is situated applies equally in the case of a tooth socket. The hæmorrhage will be found in practically every case to be situated in the muco-periosteum, which has been torn from the bone (the margin of the socket usually having been fractured), and never from the socket itself. In those rare cases where the hæmorrhage comes from the bone, a large part of the socket has been removed in the effort to extract the tooth. Even in cases where so severe an operation has been necessary, it is improbable that a vessel of an appreciable size has been damaged. In the operation of removing some inches of bone from the iliac crest for bone grafts, hæmorrhage is at times persistent, but is overcome without difficulty by placing a blunt-ended instrument over the bleeding-point, and giving a gentle tap with a hammer. Such hæmorrhage, however, implies an operation scarcely within the category of ordinary tooth extraction.

An Alternative Technique for Stopping the Hæmorrhage.

The procedure for treatment in cases of hæmorrhage should be as simple as possible, and great care should be taken to avoid injury of the parts. The muco-periosteum should be turned back gently and any loose fragments of bone removed. Any difficulty in determining from where the blood is coming may be overcome by applying lateral pressure to the soft tissues of the socket, first to one side and then the other, sterile gauze being used for the purpose. Where a fragment of alveolus has been removed, and pressure is applied in this manner, the hæmorrhage in most cases is completely arrested. Should it recur on removal of the pressure, a roll of gauze upon which the patient can close the jaws is often effective, but the pad must be carefully applied so that pressure is brought to bear directly, or by tension on the gum, upon the bleeding vessel. Direct pressure applies particularly to hæmorrhage from the quite large vessels situated in the muco-periosteum around a third mandibular molar, a tissue which is apt to be torn from the bone during the removal of this tooth. With other teeth the bleeding-point is usually away from the upper part of the socket, when the muco-periosteum must be carried over the bone when applying the gauze. Should this procedure fail, one stitch through the gum, pulling the soft tissues together across the socket, will usually succeed, but if there is any doubt, greater security may be assured by a stitch commencing on the side which is not bleeding, then taken through the bleeding side, and back again through the same side, and then back through the original flap. The vessel may be included in the loop, but when this is impossible the tension will usually suffice.

Ligature of the bleeding vessel may be undertaken, but is difficult to carry out, as one is apt to increase the tearing of the flap. If the hæmorrhage is upon a free surface, there is little difficulty in arresting it, but when it is situated more deeply, there is considerable difficulty in applying artery forceps. If, however, the vessel needs the direct application of a ligature, this is best carried out by including it in the loop of the ligature, introduced with a curved needle.

Should the simpler methods fail, it is undoubtedly advisable to make a local injection of novocaine with or without adrenalin, in order to render it easy to carry out the treatment, and to avoid injury of the parts as much as is possible. If adrenalin is used, it is necessary to remember that when the action of the drug passes off the hæmorrhage may recommence.

In cases in which the clotting of the blood is imperfect, judging from the records available, hæmorrhage would appear to be of greater frequency after tooth extraction, than from injury to other parts of the body. How often do they occur during general surgical procedure? I would venture to state that they will be found to be of far less frequency than is generally implied if the hæmorrhage is dealt with in a surgical manner.

Summary.

The treatment may be summarised as follows:—

1. The removal of fragments of fractured alveolus.
2. Lateral compression of the muco-periosteum, which can be continued by the patient.
3. Compression between the jaws of a pad applied over, or making tension upon the vessel.
4. Tension derived from stitching the flaps of muco-periosteum over the socket.
5. Ligature or stitch at actual point of hæmorrhage.

I would add that the most important point of all is that during extraction of a tooth no laceration of soft parts or fracture of alveolus should occur if it can possibly be avoided.

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Special Articles.

SMALL-POX AND VACCINATION:
DR. KILLICK MILLARD'S VIEWS.

BY JOHN C. MCVAIL, M.D. ST. AND., LL.D., F.R.F.P.S.

IN his writings on the subject of small-pox and vaccination Dr. Killick Millard has related how in his early days he lectured and conducted a newspaper controversy in support of vaccination on ordinary lines. That was before he became medical officer of health for Leicester. In 1902, a year or two after he had gone to that town, he gave an address to a branch of the Society of Medical Officers of Health on "The Rôle of the Anti." It was an interesting deliverance, exhibiting sympathy with people of eccentric views on various subjects, and saying much generally in favour of the "anti-" minded. In doing so he made, as it seems to me, one serious mistake. "First and foremost," he said, "the most striking feature of the 'anti' is his *independence*." The "anti" cares nothing for authority nor authorities. "So far from his being prejudiced in favour of the views of the majority, his sympathies are usually with the minority, and if the minority is a small one, so much the better." But—and it should have been obvious to Dr. Millard—prejudice against the majority is not independence. Independence connotes impartiality of attitude and of judgment. The "anti," instead, does not weigh opposing views neutrally and according to their merits. He is repelled by considerations which attract the ordinary intellect, is attracted by whatever appeals to the smallest number of minds, is led to defy the laws of evidence, to reject natural conclusions, to evade facts, and to resort to sophistries in substitute for reasoning. No man indeed is more prejudiced than the "anti." But Dr. Millard has always had a strong and laudable love of independence, and his fundamental error that the "anti" is independent has sadly distorted his vision. It is a great pity, for if I may say so without assumption of authority, Dr. Millard is a man of marked ability, energy, and assiduity.

I have read with much interest in THE LANCET of Feb. 9th his criticism of my address to Members of Parliament. His opinion of it differs totally from that expressed in a leading article in THE LANCET of Oct. 13th, 1923, and I might have left the two views to be measured against each other, but that would have been relying on abhorrent "authority," and so, without following Dr. Millard into every detail of his review, I proceed, if the Editor will allow me, to comment on some of its salient features.

1. *Infant Vaccination.*—Dr. Millard charges me with vagueness in the use of the term vaccination, and with, in that way, unintentionally misleading, or tending to mislead, my audience. He says, referring to my remarks on the Poplar outbreak of small-pox last year, "many of his hearers would probably think that by 'vaccination' he meant infant vaccination." Again, with reference to the proposition that small-pox can be prevented by vaccination, he asks, "What exactly does he mean by it, or rather, what would his hearers be likely to think he meant by it?" and "if he meant, or if his hearers thought that he meant (as most of them no doubt would think), that small-pox can be prevented—i.e., effectually controlled—*in the community* by a State system of infant vaccination, then I submit the proposition cannot be substantiated."

This supposition that I was suggesting either by silence or by speech, either intentionally or unintentionally, that primary vaccination is enough, or, in other words, that revaccination is not necessary for protection of the community, fairly astonishes me. He quotes me correctly as saying, "In whatever way the data are questioned, from whatever angle the problem is viewed, the conclusion is the same." But he seems entirely blind to the fact that two or three lines later I go on to say—and here I may be allowed to italicise the crucial words—"if the diminution in small-pox be considered in places and times, side by side with the practice of *vaccination and revaccination*, strong proof of causal relationship appears." In the next paragraph I speak of "countries which are *well vaccinated and revaccinated*," and after that of "classes which are *well vaccinated and revaccinated*." In some places the page is bespattered with references to the value of and need for revaccination. I point out how at the time of the Royal Commission the medical press held that "vaccination and revaccination were alike necessary for control of small-pox." In one passage, indeed, I speak not merely of revaccination, but of renewed revaccination in presence of small-pox. But independently of the fact that my address was full of revaccination, it is surely out of the question to suggest that Members of Parliament are not aware through their general knowledge that, as expounded times without number not only in THE LANCET and other medical periodicals, but also in the lay press and otherwise, the medical profession regard revaccination as essential for communal protection. In fact, I can call to mind only one member of the profession who has ever in the present generation confined the broad term vaccination to the period of infancy. That member is Dr. Killick Millard. In bringing himself more or less into line with the Leicester anti-vaccinationists who boast about that town's alleged "abandonment of vaccination," he made the remarkable reservation that when he said "vaccination had been abandoned," all he meant was "infantile vaccination as established by law in this country," or again, "universal vaccination." He thus himself deliberately gave to the term the limited meaning which he now, without the slightest justification, charges to my account. And by this device, though with a somewhat falsetto voice, Dr. Millard enabled himself to join in the chorus or duet that "Leicester had abandoned vaccination."

2. *The Story of Kilmarnock.*—I have incurred Dr. Millard's reproof by telling the Members of Parliament the story of small-pox in Kilmarnock in the eighteenth century. To me it seemed quite reasonable, and perhaps interesting, to give from an authentic source an illustration of what small-pox was in respect of prevalence, fatality, and age-incidence in this country in pre-vaccination times, and to go on to tell the audience that "it was in the midst of these conditions that Jenner came with vaccination, and though he made mistakes, it is no exaggeration to say that in such circumstances his conception that cow-pox was small-pox of the cow and would prevent small-pox in man was the direct means of saving more lives and averting more misery than it had ever fallen to the lot of a human being to accomplish from the dawn of history up to Jenner's day." He charges me with an attempt to create prejudice —"(of course this is not intended in an offensive sense)"—and with acting the part of a clever barrister. But surely I may beg my censor to note what he himself calls attention to in the same page. At the beginning of my proposition that "small-pox can be prevented by vaccination," I wrote "the mortality from small-pox is much less since vaccination was introduced. That in itself proves nothing." Dr. Millard says that I "admit" this. Then why does he not give me credit for the admission in mitigation of my "harrowing picture" of old Kilmarnock? It appears in the same address to the same audience, with only a page between. Did he want me to break the reasoned sequence of my address and jump from the middle of the first proposition into the second, lest during the intervening minutes some Member of Parliament might feel unduly stirred? Does he think Members of Parliament are mental defectives?

3. *The Vaccination Acts.*—Dr. Millard complains not only of what I have said, but of what I have not

said. In his opinion, when I was addressing Members of Parliament, "the question, and really the only question which concerns them, is the necessity or otherwise of *compulsory infant vaccination*." Here I differ from him absolutely. Compulsion or non-compulsion is a question not for doctors as doctors, but for the legislature. That is a view urged by me as long as a quarter of a century ago. The duty of the medical profession is to inform Parliament and the public of the truth about vaccination, its value and its safety, and having done so, to leave Parliament to deal with the law. Indeed, having begun my address by telling the audience about both mild small-pox and severe small-pox, I ended it with the following exordium: "If Parliament disbelieves in vaccination it should repeal the Acts. If it believes in vaccination it should exercise some degree of pressure in support of its belief, not by attempts at compulsion which would do far more harm than good, but by drawing some practical distinction between a parent no doubt wrong-headed yet sincere in his conviction that vaccination is evil, and another parent who is merely indifferent or neglectful."

Dr. Millard, however, would presumably take a very different course. He would plunge right away into politics, and would urge that all legislative pressure towards infant vaccination should cease. He would explain that this is not because he doubts its anti-variolous power, but, paradoxically, because he is well aware of it, and wishes that children or adults attacked by the classical type of small-pox should, owing to want of vaccination, have the disease in a form so severe as to make it all the more certainly and quickly diagnosed and isolated. That would be done in the interests of others who, or whose parents, had refused or neglected to take advantage of the protection which Dr. Millard knows vaccination to confer. Severe small-pox, of course, has a high fatality-rate, and leaves much disfigurement and some blindness amongst survivors. That would be part of the price paid vicariously under Dr. Millard's scheme by those who would remain unvaccinated as a result of abolition of all that remains of obligation under the Act of 1907.

He thinks that in this way much more would be gained than lost, otherwise he would not have advanced the proposition which I have stated in what appear to me to be its real terms, though they would not be his. But, however expressed, surely the scheme is utterly and ethically wrong. As medical men we have no right to gamble with human life and health in any such fashion. No doctor should dare to endanger the life of his child patient, John Smith, by refraining from protecting him against small-pox, in the hope that thereby John Brown and John Jones may ultimately, in the manner above indicated, escape small-pox. No doctor refrains from doing his best to cure or prolong the life of a tuberculous patient because he might subsequently infect others. It is our elementary duty to save a life, whether by protective or curative treatment whenever and wherever we have the opportunity, and to leave the final outcome in other hands. At the best we are poor purblind blundering creatures, but our ability remains the measure of our responsibility. I am not, however, going to argue about ethics, but our case is not confined to a question of moral principle. With very rare exceptions the medical profession holds that, to protect from the risk which alarms Dr. Millard, the unvaccinated should resort to vaccination, and the once vaccinated to revaccination, instead of trusting themselves to an extraordinary scheme, whereby those who are at present protected by infant vaccination should be replaced by a fresh community of unvaccinated with the view that, if attacked by small-pox, they should probably have a severe and unmistakable even if occasionally a fatal attack. Is not, let me ask, Dr. Millard's attitude as between the safety of these two sets of children: those whose parents bring them for vaccination under the present law, and those whose parents negligently or obstinately decline so to do—an indication of the "anti" development of mind?

4. *Individual and Communal Protection.*—Referring to my having pointed out that vaccination in this country has never been really but only technically compulsory, Dr. Millard remarks, "surely this is a verbal quibble." It is instead an incontrovertible and pertinent fact, and it was so when I pointed it out so long ago as 1898. Very oddly, the evidence which he adduces that this is a quibble demonstrates just the opposite. He shows how the Leicester Guardians failed even by prosecution and distress warrants to secure vaccination. But that is exactly my contention. Vaccination never has been compulsory. Dr. Millard evidently attaches much importance to a distinction between protection of the individual and protection of the community. Here he is under the influence of a false analogy between the old practice of small-pox inoculation and the modern practice of vaccination. Variola, whether inoculated or caught in the natural way, was infectious; vaccinia is not. But what after all is the difference between individual and communal protection? A community is made up of individuals. If one person is duly vaccinated he is safe until he needs revaccination, and after it he is safe again. If ten are so protected they are safe; if ten thousand, they are safe, and so on to infinity. But there is one advantage in communal as distinguished from individual vaccinal protection. Its value increases by a kind of compound interest. Even if in the protected community there is some small drift towards renewed susceptibility owing to lapse of time, the one is guarded by the many—he has around him a cordon of vaccination. This leads to the question of vaccination in Germany.

5. *Germany.*—Referring, before the war, to the remarkable immunity of Germany from small-pox Dr. Millard repeatedly bore testimony to the value of its system of primary and revaccination. He wrote in 1911[1]: "I quite believe that if the German system (including a third vaccination of all males) could be adopted in this country equal results would be obtained," and in the same connexion he said in 1914 that "a system of universal vaccination and revaccination and re-revaccination, where it can be effectually enforced, will practically abolish small-pox."[2] But in 1917, when news began to arrive about small-pox outbreaks in Germany, his attitude underwent a remarkable change, or at least it was very differently revealed.[3] "Behold," he cried, "Germany, the much vaccinated and revaccinated Germany, which for years past has been held up as a shining example and pattern to the world in the matter of vaccination, is now suffering from several serious outbreaks of small-pox in various parts of the country! Surely it is time that existing theories about vaccination were re-examined." Now, in The Lancet, he writes in similar fashion. But it was he who so shortly before the war had declared his belief that the German system effectually enforced would "practically abolish small-pox." When I come to the relationship of the mild type of small-pox to the case of Leicester it will appear that this *volte face* about Germany does not stand alone.

But in his outburst over the occurrence of small-pox in Germany all sense of proportion deserts Dr. Millard. When Germany's testing time came in the great war, when hundreds of thousands of prisoners from ill-vaccinated Russia were brought within its borders, Germany experienced in its 60 million population nearly 11,000 cases of small-pox. Let us take 11,000 without any limitation of "nearly." There was thus one case of small-pox in six years to every 5500 of the population. When Leicester's very mild test came in 1902–04, not in war, but in peace, there were 715 notified cases. Writing of the 1903 epidemic he remarked, regarding unrecognised small-pox (*Public Health*, Vol. xvi., p. 618), "I believe there were many other cases which never came to light at all," but, confining the comparison to those notified, and taking the Leicester population at 220,000, there was in 20 months one case of small-pox to every 300 of population, as against, in Germany in six years, one case in every 5500 of population. Yet, according to Dr. Millard, the broad results of the Leicester experiment have been "successful beyond all expectation," whilst Germany "has fallen so sadly from grace." And if Dr. Millard holds that account must be taken of the years in which Leicester (like the rest of England) has had little small-pox, let him also take account of the wonderful freedom which Germany has enjoyed since it adopted systematic vaccination and revaccination, notwithstanding the ill-protected condition of neighbouring nations.

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[1] Brit. Med. Jour., 1911, i., 1351.
[2] The Vaccination Question, p. 191.
[3] Brit. Med. Jour., 1917, i., 409.

6. *Temporary Protection.*—Dr. Millard insists again and again that vaccination gives only temporary immunity from small-pox. The way in which he stresses the word "temporary" is notable. He says that "of course" the altered age-incidence of small-pox is a perfectly sound argument for proving that vaccination confers temporary immunity against small-pox in the individual, but "it may simply shift the incidence of small-pox from one age to another." The Royal Commission concluded that the duration of highest protection might fairly be said to cover a period of nine or ten years, that then its efficacy "against attack rapidly diminishes, but that it is still considerable in the next quinquennium, and possibly never altogether ceases," that its efficacy to modify the disease diminishes more slowly, and during the later period of life it is "still very considerable." With a slight reservation as to duration of the highest protective potency, Dr. Millard has professed his entire acceptance of all this, yet he says infant vaccination "may simply shift the incidence of small-pox from one age to another."

About the Poplar outbreak Sir William Hamer stated, as noted in my address, that the three shortest intervals between primary vaccination and attack were 14, 16, and 16 years respectively; that the three shortest intervals between primary vaccination and a *fatal* attack were 43, 44, and 49 years respectively; and that the ages of the other fatal cases vaccinated in infancy were 58, 66, 66, 67, 69, 72, and 73 respectively. But, after all, to adopt Dr. Millard's view, the man of 73 had only had "'temporary" freedom from the disease. He might otherwise have lived to be 100.

In my address I said that "In towns where small-pox prevails more of the unvaccinated than of the vaccinated are attacked especially if the vaccination is recent." In illustration of that statement I gave the following figures, taken from a table in the Royal Commission report, of attack-rates among the vaccinated and unvaccinated in invaded houses. With reference to what is, or was, a frequent allegation of opponents of vaccination, that higher attack-rates and death-rates among the unvaccinated were to be accounted for by their constituting a weakly class whose vaccination had been postponed or omitted owing to the state of their health, I pointed out that this could not be said of centres of anti-vaccination where the operation was, in fact, entirely optional, these places including Leicester, Gloucester, and Dewsbury. On the contrary, if, as has been argued, vaccinated children have their blood poisoned by vaccination, they would more readily succumb to infection than the unvaccinated, whereas the opposite is the case.

—	Incidence-rate under 10 years of age.		Incidence-rate over 10 years of age.	
	Vaccinated.	Unvaccinated.	Vaccinated.	Unvaccinated.
	Per cent.	Per cent.	Per cent.	Per cent.
Warrington ..	4·4	54·5	29·9	57·6
Dewsbury ..	10·2	50·8	27·7	53·4
Leicester ..	2·5	35·3	22·2	47·6
Gloucester ..	8·8	46·3	32·2	50·0

But Dr. Millard's sole reply is, "This, I submit again, only proves that vaccination confers temporary immunity on the *individual*," and that "small-pox inoculation would show the same effect." That is positively all that these facts convey to his independent mind.

Perhaps his most singular remark in this connexion is with regard to the immunity of nurses. He says: "I quite accept the immunity of small-pox nurses as definite and convincing evidence that by vaccination (repeated as often as necessary) it is quite possible temporarily to protect *individuals* against small-pox, but I submit emphatically that this is no evidence that infant vaccination will, or does in fact, protect the community." He squanders emphasis here in denying what no human being in his senses ever dreams of asserting. How could the protection of adult nurses prove that infant vaccination would protect the community? If infant vaccination had that power there would be no need for revaccination of nurses, they being part of the community. But vaccination "repeated as often as necessary" gives *permanent* not *temporary* protection. If a man travels far enough east he ultimately reaches the west, and Dr. Millard's anxiety to use the word temporary wherever he can find room for it lands him in the strange position that temporary and permanent are exchangeable terms, meaning exactly the same thing.

7. *Absent Small-pox.*—He says I might have pointed out that "in spite of the steadily increasing neglect of infant vaccination throughout the country, small-pox has become, during the past two decades, one of the rarest of the zymotic diseases, and the mortality caused by it has been negligible." But here he is putting the cart before the horse, and is adopting one of the most obvious sophistries of the present day anti-vaccinationist. When vaccination is practically voluntary, the main stimulus to its performance is the presence of small-pox. In Britain we have been extraordinarily well off in respect of small-pox, both as to low prevalence and low fatality for two decades. On that account there has been very little vaccination. And so, it will always be possible to exhibit, as lately in an extensively circulated table, in two parallel columns, much vaccination and much small-pox, little vaccination and little small-pox. But it is the latter fact that accounts for the former. The table, for example, shows that in 1872, when 85 per cent. of the births were vaccinated, there were fully 19,000 deaths from small-pox, whilst in 1921, when only 38 per cent. of the births were vaccinated, there were only five deaths from small-pox. And it may safely be said that if in 1924 there were 10,000 deaths from small-pox the vaccinations, including revaccinations, would be in millions. In Glasgow the anti-vaccinationist could show from p. 8 of my printed address that there were in 1901–02 over 400,000 recent vaccinations, and yet nearly 1800 cases of small-pox occurred. But when small-pox diminished, vaccination diminished also. In so far as vaccination is carried on when small-pox prevalence is at a low ebb, it is an insurance against future risk, so that the rare accident of a death in any way related to vaccination is not to be measured, as Dr. Millard would wish, against current deaths from small-pox, but against what is to be encountered when variola reappears.

8. *Tetanus and Vaccination.*—Dr. Millard says I might have mentioned to my hearers "a series of disasters which occurred in the State of New York a few years ago, as a result of which it was decided by the State Legislature virtually to repeal the enactment which made universal vaccination compulsory." This question was raised by Dr. Millard in 1922, when he wrote: "I can say, however, that in 1915 the State of New York, acting on the advice of their health officer, Dr. Herman Biggs, virtually abolished compulsory vaccination by repealing the regulation under which all children had to produce evidence of vaccination before being admitted to school. Dr. Herman Biggs, who is one of the most experienced and distinguished members of the Public Health Service in the States, gave this advice, I understand, because he

had come to believe that the disadvantages, in the way of injury to health caused by child vaccination, more than outweighed the advantages to be gained by immunisation against a rare disease like small-pox." It chanced that Prof. Mazyck P. Ravenel, M.D., of the University of Missouri, read this statement, and sent to Dr. Herman Biggs a quotation from Dr. Millard's letter. He received from Dr. Biggs a reply, which began: "The quotation as regards my attitude towards vaccination is, of course, incorrect." He went on to tell how in a great vaccination campaign in the State of New York in 1915 there had been a number of cases of tetanus, with 11 deaths, that in consequence legislation was introduced which would have repealed all the provisions of the vaccination law and would have injured the whole public health programme, that to insist on compulsion under the existing conditions was not justifiable, and that he had therefore consented to amendment of the law. This was a very different attitude from that attributed to him by Dr. Millard—"that he had come to believe that the disadvantages in the way of injury to health caused by child vaccination more than outweighed the advantages to be gained by immunisation against a rare disease like small-pox." Indeed, there is not a syllable by Dr. Biggs which excuses these words. Dr. Millard replied, expressing regret, "if" he had misrepresented Dr. Biggs, but at the same time expressing pleasure in having guarded himself by the reservation "as I understand." He went on to explain that he had been told about the matter by an officer of standing in the New York State Service, and had made a written note at the time of what he was told.

Eleven deaths from tetanus introduced by vaccination would most certainly and most justly be regarded in this country as a great disaster. But no event of the sort has ever been recorded in England. Dr. T. D. Acland, who investigated the whole subject of vaccinal injuries for the Royal Commission, was acquainted with only one case in more than five million consecutive vaccinations in this country, and even in it there was no evidence that the tetanus was invaccinated. In the Registrar-General's office the books, in which are set down all references to vaccination in certificates of death, go back for 29 years—from 1895 inclusive—and while diseases like measles, whooping-cough, bronchitis, erysipelas, &c., are mentioned, tetanus finds no place whatever in the volumes. Besides, I was addressing members not of the American legislature, but of the British House of Commons. Yet Dr. Millard in his anxiety that nothing should be missed which could possibly be alleged against vaccination, would have had me look across the Atlantic in search for such material. Hearsay was quite enough to satisfy him that Dr. Herman Biggs agreed that the disadvantages of vaccination outweighed its advantages. Similarly he chanced to read in a lay newspaper that all of 22 who died of small-pox in the Poplar outbreak had been vaccinated in infancy, and he wrote to the medical press that "it is interesting to learn" this, with the result that when it was pointed out to him by someone that he was wrong, he had again to express his regret, but again with a reservation—this time that the statement so "interesting to learn" was "quite immaterial" to his main argument. The readiness with which he accepts and gives currency to such a story is typically "anti."

9. *Leicester.*—Naturally Leicester bulks largely in Dr. Millard's thoughts, and he may be excused for complaining that I did not say more about it in my address. Well, it would have been quite easy to occupy the whole available time with the case of Leicester, and it would have made quite a good text, but the title of the address was Small-pox and Vaccination, and the discourse had to be of a wider scope. I had no occasion to evade the issue, however, and as Dr. Millard feels aggrieved I shall indicate what might have been said had the subject been Leicester.

(*a*) *Unfulfilled Prophecy.*—Dr. Millard regards few of his compositions on the subject of vaccination and small-pox complete unless they contain reference to one particular passage in "Vaccination Vindicated," published by me 37 years ago. I have noted it in *Public Health* in 1904, in his book "The Vaccination Question" in 1914, in *Public Health* in 1917, and now once more in his article in THE LANCET. I do not recollect paying attention to it until the Milroy lectures in 1919, but then I took the trouble to call his attention definitely to the mangling to which he had subjected the passage in question. I wrote as follows in 1887: "In Leicester when its time arrives we shall not fail to see a repetition of last century experiences, and certainly there will afterwards be fewer children left to die of diarrhœa. It is to be hoped that when the catastrophe does come the Government will see that its teachings are duly studied and recorded." And also: "Throughout the country there has been nothing approaching an epidemic since 1870–73, and Leicester has had little chance of getting its 'immunity' tested. When another great outbreak occurs among the susceptible population of England it will be time enough then to see how Leicester comports itself under the ordeal." In Stevenson and Murphy's "Hygiene" in 1893 I repeated the reservation that "since the Leicester experiment was begun it has not been subject to the test of any general epidemic like that of 1870–73." That obviously was in my view the criterion of Leicester's protection—the occurrence throughout the country of an epidemic approaching that of 1870–73. The matter is of little moment, but as Dr. Millard evidently regarded it as of great polemic value I specifically pointed out to him in the Milroy lectures that he "does not give the full quotation, and in 'The Vaccination Question' he definitely excises my reference to the 1870–73 epidemic."

Now, in THE LANCET in 1924 he makes the same excision, which perhaps may be taken as an incidental indication of his attitude to the whole subject. The question is not what he thinks of the point I raise, but what I think, and he has no right whatever to exclude from the quotation the words I have asked him to include.*

Apart from the personal question, two important considerations have to be borne in mind, first, that glycerinated calf lymph is now available to meet the needs of any epidemic anywhere, as compared with the meagre quantities of humanised lymph which alone were readily obtainable from the weekly vaccinations of babies at the time I wrote; secondly, the substitution throughout the provinces of the mild American type of small-pox for the virulent Eastern type—a substitution which no one foresaw in the days when the pandemic of the seventies ruled the conceptions of the profession and the public as to what small-pox meant in epidemicity, infectivity, and mortality. And so little am I troubled by the fact of having been no more able than anyone else to visualise the coming change, that, after all, here and now I give Dr. Millard full permission—though he no more needs it than a man needs the gift of the freedom of his own city—to go on mangling that quotation throughout the rest of his life.

Curiously, in 1917 and 1919 Dr. Millard himself has had some hankerings after prophecy. Referring to what appeared in the Milroy lectures about the possibility of the disappearance of small-pox, and, consequently, of the need for vaccination, he said: "I go a little further, and say that as small-pox has *already* virtually disappeared so also has the need for infant vaccination. In this matter I am merely a few years ahead of Dr. McVail, that is all." But he was at least a few years too far ahead of me. Since 1917, when there were only seven cases, the subsequent years have successively had 63, 311, 280, 336, 973, and about 2500 cases, whilst in the first eight weeks of 1924 there have been 563 cases. If this goes on someone may by and by accuse him of unfulfilled prophecy, but if so I hope he will be quoted correctly.

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* Too late for notice in the text I find that in "The Medical Officer" of March 15th Mr. Millard once more makes the quotation and once more excises the words in question.

(*b*) *The Method*.—Had I gone briefly into the discussion of Leicester and its method I would have had to state that the story of Leicester being well vaccinated before the pandemic of 1870–73 was apocryphal (Dr. Millard being partly responsible for the Apocrypha); that the Leicester method was largely a paper method which sufficed for anti-vaccination propaganda when small-pox was absent, but broke down in point after point when small-pox was present; that, indeed, what was abandoned when small-pox came was not vaccination, but the method itself in its most advertised features; that vaccination was at once resorted to, that hundreds of contacts were vaccinated, and that in order to make more room for small-pox the hospitals were emptied of scarlet fever, which had to be allowed to run its course in the houses of the patients.

It would have been a pleasure to add (and I wrote to that effect in 1913) that by heroic measures like these, which were thoroughly justified in the dangerous condition of the population in respect of liability to small-pox, Dr. Joseph Priestley succeeded in limiting the epidemic of 1892–93 to 355 notified cases in 15 months, and that Dr. Killick Millard by similar unwearying devotion to duty was able to limit the disease in about 20 months in 1902–04 to 715 notified cases. One factor which contributed greatly to the limitation of cases alike in 1892–93 and 1902–04 was the general mildness of the type of disease, and its consequent low infectivity, notwithstanding the greater likelihood of cases being missed. But unfortunately the credit thoroughly well earned by Dr. Millard for his limitation of the prevalence of the disease is somewhat tarnished by a subsequent want of candour. In 1904 he freely acknowledged how much he owed to the attenuated strain of the virus. "I fully realise," he said, "that the results of the experiment in the future may be very different from those achieved in the past. Moreover, it may have been merely a lucky coincidence that the two epidemics which have occurred since vaccination has been abandoned have been of such an exceptionally mild type. The epidemic at Gloucester was far more fatal."

He was here very prudently and properly reserving his opinion as to what might happen to the town if it were invaded by the old 1870–73 type of epidemic variola. Fortunately no such calamity has befallen the Midlands of England, and Leicester has shared in the unparalleled freedom from severe small-pox. But in 1914, ten years later, he concluded he could safely destroy the bridge he had built for possible retreat. And in doing so he rather comically wrote as if it was not he who had constructed it for himself, and he proceeded to jeer at those to whom he would like to attribute it. "Many people," he writes, "appear to think that, owing to some extraordinary good luck, small-pox has never come to Leicester in a fatal or epidemic form since vaccination was abandoned." Again, "Hitherto it had often been alleged that the 'Leicester method' had never been adequately tested, and that Leicester had been lucky." Thus, under the curious pseudonym of "Many people" he attacks himself for having been so needlessly wise in 1904, and he deserts the sound view of the debt Leicester owed to the mildness of type of its small-pox for the thesis that "it seems more reasonable to ascribe the low case-mortality to the comparatively good sanitary state of the town." I shall now show how Dr. Millard supports that hypothesis.

(*c*) *Mild Small-pox.* — Dr. Millard [4] gives the following table.

Small-pox Epidemics in Leicester.

Year.	Population.	No. of cases.	No. of deaths.	Attack-rate.	Mortality.	Case-mortality
1871–72	100,000	(3300)*	358	(33·0)*	3·58	(10·8)*
1892–93	183,000	355	21	1·94	·11	6·0
1902–03	220,000	394	21	1·79	·09	5·3
1903–04	224,000	321	4	1·43	·02	1·3

* Estimated only.

Concerning the lessened severity shown in the table, he remarks that, "Obviously, some factor other than vaccination has been at work, and it is reasonable to suggest that improved sanitation is the most probable cause." The figures for 1871–72 are only an estimate, but the pandemic of which they were a small item was of extraordinary extent and this country has never again had such a visitation. Let it be noted, however, that the greatest proportionate diminution was between the third and fourth epidemics, the latter having barely one-quarter of the fatality-rate of the former. The third epidemic was that of 1902–03, the fourth that of 1903–04. But the first known case of the 1903–04 outbreak began less than six weeks after the onset of the last of the cases of 1902–03; in fact, the hospital had to be reopened within less than one week of its closure. Yet Dr. Millard thinks it "reasonable to suggest" that the reduction of fatality from 5·3 to 1·5 per cent. was most probably due to sanitation. Sanitation having taken 20 years to reduce the rate from 6 to 5·3, suddenly, in a period of weeks or months, reduced it to 1·3. And Dr. Millard does not seem to be joking in submitting his table. The fact is, as already urged, and as realised by Dr. Millard at the time, Leicester was sharing in the attenuated strain of small-pox which prevailed in the provinces of England in 1902–05. Though the Leicester fatality rate in the epidemic prevalence of that time was very low it was by no means the lowest. Everywhere else, so far as I know, the very favourable case mortality was thankfully accepted as due to the mild strain of small-pox. But that view is no longer good enough for Leicester, and so Dr. Millard submits the alternative on which I have commented.

The cause or causes of the remarkably diminished prevalence and fatality of small-pox since the beginning of the present century is a subject of the greatest epidemiological interest, but it cannot be entered on here. Epidemic diseases change from age to age and from generation to generation. Up till 1917 small-pox was retreating whilst influenza has advanced. The out-and-out opponent of vaccination would attribute the decline of small-pox to sanitation without attempting to analyse that term, whilst he is beginning to revive the old fable that increase of cancer is due to vaccination.

Concerning the future, I may recall that more than 30 years ago, probably before Dr. Millard had begun controversy in support of vaccination, I wrote (in Stevenson and Murphy's "Hygiene") that "it will not do to assume that throughout the world, from now to the end of time, small-pox will continue to rage epidemically unless prevented by universal vaccination," that "quite conceivably, small-pox rather than either scarlatina or measles, might be the next in order of the maladies to disappear from the civilised world," and that "when small-pox does go, the world will be rid of it, but while the bane remains with us, so also must remain the antidote." That is still my opinion. If we could be sure we were done with small-pox, then, indeed, vaccination should be abandoned not in the sophistical Leicester sense, but in reality, and the vaccination epoch would only remain in medical history as the time of the greatest success which had ever been achieved in the development of preventive medicine. Six or seven years ago it almost looked as if we might be approaching the disappearance of small-pox, but, unfortunately, there has now been a serious relapse into renewed prevalence, and we dare not yet dispense with the proved preventive.

Finally, my apologies are due to THE LANCET and its readers for occupying so much of its space in the first year of its second centennium.

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[4] The Vaccination Question, p. 125.

THE EFFECTS OF RADIUM AND X RAYS UPON NORMAL AND CANCEROUS TISSUES.

THE admirable memorandum on cancer issued for the guidance of local authorities from the Ministry of Health in August last,[1] is to be supplemented, as occasion permits, by additional memoranda. The effects of radium and X rays upon normal and cancerous tissues is the subject dealt with in the first[2] of these supplemental monographs by Prof. W. S. Lazarus-Barlow.

Early Investigations and Conclusions.

In discussing early investigations and conclusions, he points out that from the empirical employment of X rays and radium, shortly after their discovery, in the treatment of cancer, the following facts emerged. It became clear that all varieties of cancer were not equally amenable to irradiation; also that X rays were not an entity, but that the rays were of different wave-lengths. Similarities between the rays from radium and X rays were noted immediately; differences were detected at a later date. At the present time each agent of radiation has its own more or less well-defined region of applicability, while sometimes a combination of the two is more effective than either used singly. It became clear that the action of radiations upon a group of cancer cells regarded as a new growth was not identical with that upon cancer regarded as a disease. Even though the duration of the disease were unmodified by treatment with X rays or radium, there was ample evidence that by their use the lot of the patient was often rendered more endurable. It became clear that whatever the degree of amenability of a growth to irradiation in the first instance, it became less responsive to irradiation on subsequent occasions. Lastly, it became clear that research was necessary upon the response of animal cells of all kinds to the varieties of radiation represented by soft, medium, and hard X rays, and alpha, beta, and gamma radiations from radium. More or less synchronously some attention was given to the biological properties of ultra-violet light, which consists of rays whose wave-length is greater than that of the softest X rays, and to the radiations from mesothorium, which compare with the rays of radium.

The casual nature of much of the pioneer work on the therapeutic use of radiations, together with the absence of fundamental data or precautions, much impaired its value. Later observations of the biological action of radiations are more systematic. Prof. Lazarus-Barlow divides these into investigations into their effects upon (1) normal cells and tissues; (2) cells of new growths, whether malignant (cancer) or non-malignant; and (3) cancer as a disease, where the radiations act on cancer cells intermingled with non-cancerous cells in an individual abnormal because the subject of disease. Owing to the lacunæ in our knowledge, it is impossible to consider X rays and radium rays separately, but there is reason to believe that much that is true for gamma rays of radium is also true for hard X rays, and that to some degree the same obtains for beta rays and soft X rays.

The Effects of Radiations upon Normal Cells and Tissues.

The nucleus, or cytoplasm, or both, may become dropsical or show isolated clear spaces (vacuoles) after exposure to irradiation; the rod-like chromosomes become irregular in shape, or granular, and divide irregularly; the framework of the nucleus, instead of showing an even arrangement, becomes collected into irregular heaps; the material formed by secreting cells is altered in quality or quantity; and the cytoplasm may undergo degenerative changes, chiefly mucoid. These are early changes. A day or two later, if the irradiation has been severe, dying and dead cells and fragments of nuclei or cells are seen, or a structureless mass of material may be the sole representative of the former living cells. If the irradiation has not been too severe, signs of recovery become manifest, and there is evidence that the damaged cells are being removed.

Changes such as those described, when occurring over a large area, lead to profound disintegration of tissue. This action must be remembered when deeply-seated abdominal new growths are treated by large doses of highly penetrating (hard) X rays. Before the great radio-sensibility of the intestine was recognised, cases occurred in which the medical practitioner, in his endeavour to irradiate sufficiently a cancer of the womb, damaged the intestine to such an extent as to be dangerous, and in a few cases fatal, to the patient. At the present time this danger is well recognised and guarded against.

It has been shown that cells and tissues manifest great differences in the degree to which they are affected by rays. The radio-sensibility of the lymphocyte of the blood and lymphatic glands is so great that an intense destruction occurs within an hour after a slight exposure of the animal to gamma rays; cells of the pancreas and thyroid, on the other hand, appear to be unchanged, even after severe irradiation; and brain cells are unaltered except under large doses. The behaviour of the same variety of cell differs in different animals. In the domestic cat, where fatty conditions are common in the kidney, gamma radiation leads to a profound fatty degeneration in the secreting cells of that organ, which has no parallel in any other species of animal hitherto examined. In the rat and in man voluntary muscle shows a marked proneness to degenerative changes of a fatty nature that does not occur in the frog, the rabbit, or the cat.

Differences of a like kind obtain even with cells commonly regarded as belonging to a single class. Endothelial cells lining blood-vessels show a few changes, while those lining certain of the large spaces of the body, or covering the stomach and intestines, show intense desquamation, and this in the same animal exposed to a single dose of gamma radiation.

Besides these injurious or destructive effects of radiations upon cells, in certain instances it has been found possible, by using minute doses of rays, to stimulate cells to increased rapidity of division. There is some evidence also that a muscle and nerve, under slight radiation, are stimulated, so that the muscle is rendered capable of putting out more work. The point is one of great importance in the radiotherapy of cancer.

Effects of Radiations upon Cells of Malignant and Non-Malignant New Growths.

Just as the lymphocyte has been found to be intensely radio-sensitive, so new growths built up of masses of lymphocytes, whether non-malignant (lymphoma) or malignant (lymphosarcoma), respond to irradiation by enormous destruction of the constituent cells. In the same way, the three varieties of carcinomata show alterations under radium or X rays analogous to those undergone by their normal prototypes. In the case of the sarcomata, the cells, like their prototypes, show general rather than particular changes after irradiation. It is undoubted that death of the cells and an intense mucoid degeneration take place, often over large areas.

It would appear that the effects of irradiating sarcoma cells depend rather upon the youth of the cells themselves, and the rapidity with which they attain full size and undergo division, than upon any peculiar radio-sensibility of that variety of cell as such. It is in accord with this view that wide differences obtain between the amenability to radio-therapy of the numerous different varieties of sarcoma.

As to endotheliomata, it has been noted above that the reaction of endothelium to gamma radiations appears to differ in different parts of the system. From observations made on the differences between the reaction of the lymphocyte and of the endothelial cell under identical radiation it would appear, not only that a radiation treatment which would be effective for a new growth built up of lymphocytes would almost certainly be ineffective for one built up of endothelial cells, but also that in the case of endothelial growths themselves amenability to radiation treatment would vary within wide limits. This is found to be true, some endotheliomata responding well to radiotherapy, others hardly at all.

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[1] THE LANCET, 1923, ii., 479.

[2] Circular 476. H.M. Stationery Office. 1*d*.

Under irradiation the fibromyoma often shows remarkable diminution in size, but it is not yet certain whether the rays directly influence the tumour cells, or whether the effect is indirect and dependent upon ovarian changes resulting from participation of the ovary in the irradiation to which the tumour was subjected.

Effects of Radiations in Cancer as a Disease.

The necessity for effective treatment, not only of the central growth, but of the peripheral cancer cells, implies that in order to irradiate a small number of malignant cells great numbers of normal healthy cells of the part are coincidently irradiated, and to that extent damaged. The desideratum for all radiation treatment is maximal damage for the malignant cells and minimal damage for the body cells amongst which those malignant cells lie. It is usual to consider the normal tissue cells as being less radio-sensitive than the malignant cell but the margin is not great, and so much damage to normal tissues may accompany vigorous radiation of a new growth that an extensive intractable ulcer results. By some authors it is held that the poor results of radiotherapy when cancer has invaded bone depends essentially upon the coincident death of bone which the irradiation has brought about.

In yet another direction normal cells are involved when a case of cancer is undergoing treatment by radiations, particularly if the irradiated area be large. The blood circulating through the part is itself under irradiation, and lymphocytic blood changes, owing to the repeated access of fresh blood to the part, in course of time involve the entire circulating blood. In addition, the lymphatic glands may come under the influence of the rays, with the result that the total number of lymphocytes in the body suffers a diminution. Where the patient's blood was normal before irradiation the reduction of lymphocytic numbers may be relatively small, and return to normal takes place after an interval. But where the cancerous disease has already led to blood changes, irradiation, if sufficiently heavy for satisfactory treatment of the new growth, would lead to a grave augmentation of the blood condition and proportionate harm to the patient.

Many authors have described a "flaring-up" of cancer—particularly in distant parts of the body—after irradiation treatment, and have ascribed the phenomenon to operation of a stimulative action by minute doses of rays. Indeed, some authors have gone so far as to suggest that cancer may be originated in non-cancerous tissues in this way. As a matter of practical experience, it would appear that the risk of inducing cancer in a non-cancerous individual during treatment is negligible.

Prof. Lazarus-Barlow proceeds to discuss the various methods of applying radium and X rays in conjunction with each other and with surgery, and concludes as follows:—

"One thing is certain: the mental attitude of those most interested in radiotherapy has changed. Not only do they recognise that the radiations themselves, the cancerous conditions upon which they cause those rays to act, and the influence of the rays upon the normal tissues of the patient are far more complicated than was suspected at first, but also they envisage the radiation treatment in a fundamentally different way. At first the rays were regarded in the light of a specialised variety of caustic. As such they were inferior to many caustics in the surgeon's armamentarium. Then it was seen that cells vary in radio-sensibility, and a directly selective destruction of cancer cells was the goal, but was barely attainable by reason of the insufficient delicacy of our methods. Last of all, there has arrived in the minds of some authorities the conception of radiations as an agent whereby the cancer cells are altered in such a way that they evoke, within the patient's body and through the agency of his normal tissues, an increased production of some substance or substances antagonistic to themselves. The formation of such antagonistic substances within the patient, upon this view, characterises every case of cancer, and the course of the disease varies according to the degree in which they are present. In all but the rarest instances, however, they are insufficient, so that the cancerous process sooner or later gains and maintains the upper hand and leads to death. If by means of subjecting cancer cells to radiations one is able to imitate and enhance this natural process, the hope lies near that a production of antagonistic substances would be induced sufficient to hold the cancerous growth in check, then gain the upper hand, and ultimately destroy the cancer cells themselves."

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Inauguration of the Anti-Cancer Centre at Montpellier.

THE Minister of Hygiene and Public Welfare presided at the recent inauguration of the anti-cancer centre of Montpellier. Three similar provincial centres already exist at Bordeaux, Strasbourg, and Lyons, which are undertaking the specialised study and treatment of cancerous conditions. The Montpellier centre serves the district of the Languedoc and Roussillon, and is under the direction of Prof. Forgue, assisted by a carefully chosen staff, which includes Prof. Pech, Prof. agrégé Lamarque, for the physical causes of the disease, with Prof. Grynfeltt and Prof. agrégé Turchini for the study of pathological anatomy. Research work will be conducted in conjunction with the heads of the schools of medicine of Montpellier, and since the hospitals of the town have a large clientèle of patients suffering from cancer, it is to be expected that this centre will become one of the most active schools for the study and the treatment of malignant disease.

Shell-fish Control.

Since the introduction of preventive inoculation the clinical aspect of typhoid fever has changed considerably. In a paper read recently before the French Academy of Medicine, Mr. Courtois-Suffit gave a detailed study of 328 cases of typhoid and paratyphoid fever which had come under his observation during the last four years, and in which he expressed the opinion that the disease as it appeared at present was rarely due to water, but was to be traced chiefly to the consumption of infected food, mainly shell-fish, and in particular oysters. The Government has added what amounts to a corollary to this communication, by publishing a circular addressed to local authorities, with the object of controlling the trade in oysters and other shell-fish. Establishments trading in oysters will be listed in future, and only those which have been proved to be conducted on hygienic principles will be permitted to sell their wares. Shell-fish may not be sent from distributing centres unless they are accompanied by an official statement as to the cleanliness of their source of origin, while consignments of shell-fish which are not disposed of in a short space of time will be summarily seized and destroyed.

"Le Salon des Médecins."

The Salon des Médecins was recently opened for the first time since the war, under the presidency of Mr. Paul Strauss, Minister of Hygiene. In this salon are exhibited works of art created by contemporary medical men. The number and variety of these works of art are great, and include paintings, engravings, sculpture, pottery, and specimens of book-binding. The standard of art is high, and the salon is the more interesting because among the artists whose works are shown may be found the names of doctors who are known to lead busy professional lives, and who find, nevertheless, time to devote their leisure to the creation of beautiful things.

HOLLAND.

(FROM OUR OWN CORRESPONDENT.)

A New Disease Prevention Act.

A NEW law on infectious disease is about to be introduced; the laws now in force on this subject dating from 1872 and 1884. The preamble to the Draft Bill speaks of the old laws as "a queer, confused system of legislation." The municipalities were in charge of the execution of these laws and thus they ordered or refrained from ordering disinfection according to their own views or those of the advisory doctors (who in many cases were not too well-posted on the matter). The Government had no power to force them to act or to prevent them from doing so, if this was considered to be necessary. There was no unity of action and the epidemiological basis left much to be desired. According to the new law, management and control will be entrusted to the district medical officers of health (inspectors). The mayors must simply execute orders, but they can appeal to the head inspector. The theories of Charles Chapin (modes and sources of infection) are only slowly coming home to the Dutch medical men and epidemiologists. Not so long ago, in the case of diphtheria and scarlet fever, the room, bedclothes, the house itself, schoolrooms, &c., were disinfected, whereas in malignant cases expropriation and even destruction was under consideration—and here and there put into practice. A check will now be put on all these economic and epidemiological follies, which the Treasury can no longer afford. The strongest opposition comes from the side of the few sanitary engineers who are directors of sanitary and disinfection services, which services are more and more being brought under the public health service. People are more and more acknowledging the truth of Chapin's words, "Any scheme of preventive medicine which fails to take the carriers and the mild or missed cases into consideration is doomed to failure." Therefore, the Draft Bill opens the possibility of isolating carriers who are considered to be "a *special* danger for carrying the infection" and keeping them isolated until the infectious period is over. In few countries only has it been possible to make rules which encroach so severely upon social life and personal liberty. The Dutch Draft Bill goes even further and opens the possibility of prohibiting chronic typhoid bacilli carriers to work in trades which are specially liable to make possible the carrying of the infection—for example, handling foodstuffs, dairy business, waterworks. These people will be compensated in respect of loss of income if they are poor.

Vaccination.

So far the number of children who have not been inoculated has been small since they are not admitted to school unvaccinated, and education being compulsory only well-to-do people can afford to be objectors. Amongst its 3300 medical men Holland only counts two who give a certificate to every child to the effect that there are "objections on account of reasons of health." Conscientious objectors travel long distances to these anti-vaccination doctors. Political considerations have now induced the Government to insert in the Draft Bill a conscientious objection clause which enables objectors to get exemption after much less trouble, whereas further the signature of one doctor will be sufficient in order to get exemption on account of reasons of health. For the time being the Government want to give no more than 1 per cent. certificates of exemption, but it is likely that, when once an opening is made, the gap will become larger and larger. The medical world is very strongly opposed to this violation of the principle of compulsory vaccination, and it is still quite uncertain whether Parliament will pass the Government proposal.

Compulsory Notification.

The compulsory notification of the cases of infectious diseases mentioned in the decrees of the law is maintained, and this notification is extended to *suspected* cases. In this connexion it should be understood that tuberculosis and venereal diseases do not come under this law on account of the special social and moral aspects of the said diseases. Medical circles are almost unanimously opposed to compulsory notification in the case of tuberculosis and venereal diseases; as regards tuberculosis because no result is expected therefrom, and as regards venereal diseases because the confidence in the doctor would be shaken and many people would be kept back from putting themselves under treatment. Compulsory notification without compulsory effective treatment is regarded as useless.

Dangerous Infectious Diseases.

The Draft Bill discriminates between the dangerous exotic infectious diseases as cholera, plague, typhus fever, and small-pox, and the indigenous diseases as typhoid fever, scarlet fever, and diphtheria. Measles and whooping-cough will not come under the law, but malaria does come under it. For the dangerous exotic diseases compulsory hospital treatment is stipulated unless the family doctor is of opinion that the patient cannot be transported. In the latter cases the most rigorous isolation at home is ordered, a policeman or a soldier is to be placed before the door, who is not allowed to admit anybody but the doctor, the clergyman, and the notary. Such compulsory measures are also possible in case of the other diseases, but they will only be applied in special cases and if the family refuse to take the measures ordered for the prevention of carrying the infection.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

THE annual meeting of this Fund was held at St. James's Palace on April 1st, when, in the unavoidable absence of the Prince of Wales, the Earl of Donoughmore presided.

The Accounts for 1923.

Lord Revelstoke (the hon. treasurer), in moving the adoption of the accounts for the year which ended on Dec. 31st last, said that the conspicuous success of the Combined Appeal, which was opened in April, 1922, resulted in a total distribution of just over £418,000. The special distribution to hospitals through the King's Fund amounted to £365,000, of which £115,000 was distributed in 1923. The income of the King's Fund itself had benefited by the receipt of a considerable sum in dividends on the bequests of Lord MountStephen and Sir Thomas Sutherland. There was also an increase in annual subscriptions. The invested funds were increased by a further £175,000 received from the estate of the late Sir Thomas Sutherland, £11,000 from the estate of Mr. H. H. Wills, and £2000 in smaller sums. Other legacies amounted to £48,000, an amount rather smaller than that received in 1922, but £235,000 was distributed, an increase of £15,000 over 1922, the whole of this sum being provided out of the receipts for the year.

The motion having been seconded by Lord Mildmay of Flete, it was carried unanimously.

Improved Financial Position.

Lord Stuart of Wortley, chairman of the Management Committee, moved the adoption of the annual report of the General Council. This stated that in respect of income and expenditure, omitting the special distributions, the financial position of the hospitals had shown a steady improvement: the net aggregate annual deficit for 113 hospitals in London having been reduced from £383,000 for the year 1920 to £210,000 for the year 1921 and £174,000 for the year 1922. The total receipts for the year were £575,396 12*s.* 9*d.*, of which £145,113 1*s.* was received from the Hospitals of London Combined Appeal; £175,000 from the estate of the late Sir Thomas Sutherland; £2000 from the estate of the late Mr. Samuel Lewis; £48,398 17*s.* 5*d.* from other legacies; £12,767 15*s.* 8*d.* from gifts to capital; and £192,116 18*s.* 8*d.* from general receipts. The amount of the ordinary distribution was £235,000, an increase of £15,000 over 1922. The League of Mercy contributed £14,500, as against £15,000 in 1922. The total received by the Fund from the League since its foundation in 1899 was now £353,500, apart from the sums awarded by the League to institutions outside the area of the Fund's distribution. During the year the amount spent on the administration of the Fund was £8904 17*s.* 6*d.*, or £2 1*s.* 4*d.* per £100 of the total received (apart from the Combined Appeal), as compared with £8607 12*s.* 10*d.*, or 15*s.* 8*d.* per £100, in the previous year. The average yearly outlay in this respect for the whole period since the inauguration of the Fund had been £3635 2*s.*, the corresponding percentage of the receipts being £1 5*s.* 9*d.*, or just over 3*d.* in every £1 received.

Hospital Progress.

The adoption of the report was seconded by Sir Frederick Fry and carried unanimously. Sir William Collins then presented the unanimous report of the Ambulance Cases Disposal Committee, copies of which will be sent to the Voluntary Hospitals Commission, to the Minister of Health, to the police and ambulance authorities, and to the voluntary hospitals and infirmaries concerned. The reference of the Committee was limited to the method of ascertaining where bed accommodation was available for accident cases requiring admission as in-patients, and the suggestion that daily reports of vacant beds should be supplied to the police and ambulance authorities.

A message from the King congratulated the Council on the steady increase in the resources and annual grants of the Fund, and a letter from the Prince of Wales contained references to the progress of the hospitals. He stated that the gap between income and expenditure, taking all the London hospitals as a whole, was still closing year by year. For the year 1920, the very worst year of all, the gap, omitting all special distributions, was £383,000; for 1922 it was £174,000; while for 1923 it was too early to give the exact figures; but it was already clear that the hospitals, taken as a whole, had done better still. With the aid of exceptionally large legacies at two or three big hospitals, there was actually a net aggregate surplus, but, even without these legacies, the gap, for the year 1923, would be very nearly closed. This steady progress, going on now for three years without a break, was very hopeful, but it did not mean that the hospitals and the public could go to sleep in the belief that everything would come right of itself. The hospitals will still have to keep up their income at a figure nearly two and a half times what it was before the war, and they also had to be constantly adopting the latest improvements, and extending their work, in order to keep pace with the needs of the patients and the developments of medical science, necessary changes but often very expensive. The figures were only aggregate ones, and while steady general improvement was shown, there were a good many individual hospitals that still had deficits, and at some of these the financial position continued to give rise to serious anxiety.

The proceedings closed with a vote of thanks to the chairman.

Medicine and the Law.

The Harnett Case Appeal.

ON April 7th an application for judgment or a new trial on the part of Dr. C. H. Bond and Dr. G. H. Adam came before Lord Justices Bankes, Warrington, and Scrutton, sitting as a Court of Appeal. The Attorney-General, in opening the appeal on behalf of Dr. Bond, said that the real importance of the verdict in the action, tried before Mr. Justice Lush and a special jury, was this. It would be impossible henceforth to get a medical man to send anybody whom he believed to be a lunatic to an asylum, if the law was that, if a doctor acted negligently, he would be held responsible for all damages that flowed therefrom. Nobody being willing to take the risk of certifying, the country might be flooded with persons who ought to be in asylums. It was, he submitted, very difficult to see how the alleged negligent act of Dr. Bond could make him responsible for the negligence of others. The hearing is being continued. In this appeal, the solicitor to the Ministry of Health is acting for Dr. Bond, Messrs. Le Brasseur and Oakley for Dr. Adam, and Mr. W. E. Hempson for the British Medical Association.

The Public Authorities Protection Act.

In the King's Bench Division Mr. Justice Bailhache dismissed an action for libel brought by Miss A. B. Hope, formerly employed as "house mother" at Shirley Schools against Dr. J. B. Ridley, medical officer of the Bermondsey Guardians. In 1919, in his official capacity, Dr. Ridley made reports to the guardians to the effect that Miss Hope suffered from tuberculosis and therefore was not fitted for employment in the case of children. Miss Hope contended that these statements were untrue and libellous, and that she did not suffer from tuberculosis. Her writ, however, was not issued until a date considerably after her dismissal. The Public Authorities Protection Act, 1893, it was submitted by the defence, covered the case, as under it no action would lie against a public authority for any act done in the execution of a public duty, unless it were commenced within six months of the commission of the act complained of, and further that the Act protected in the same manner any person acting for a public body. It was submitted for the plaintiff that she had only recently been able to prove that she did not suffer from tuberculosis, and that it was then that the cause of action arose. Mr. Justice Bailhache held that Dr. Ridley was protected by the Public Authorities Protection Act and that proceedings had not been taken within six months as required.

Cancer of the Scrotum in a Mule-spinner: a Test Case.

At Ashton-under-Lyne County Court on April 4th, before Judge Mossop, a case was reopened of the utmost importance to the cotton trade in Lancashire. The point at issue is whether "epitheliomatous ulceration" or "epithelioma of the scrotum," contracted in the course of the worker's employment as a mule-spinner, is a disease for which compensation should be paid. The case came before the Stalybridge Court on Jan. 11th last and was then adjourned to enable certain particulars on the certificate to be amended.[1] Mr. E. Wingate-Saul, K.C. (for the applicant), in reopening the case, said the disease got its popular name from the fact that at one time it was prevalent among chimney sweeps. In 1920 it was discovered that it was a disease which was attacking large numbers of mule-spinners, of which there are 20,000 in the country. As a result of Home Office inquiries, in 1920, epitheliomatous cancer was added to the Act. On investigation it was found that out of a very large number of cases of epithelioma of the scrotum admitted and treated in the Manchester Royal Infirmary over 50 per cent. occurred in mule-spinners. The disease began on the anterior aspect of the left side of the scrotum. It was stated that when working a spinner "pieced" with his left hand and stood on his left foot, his left side at the groin coming in contact with the faller bar which was coated with mineral oil and the worker's pants became impregnated with the oil. Mr. H. H. Southam, F.R.C.S., who had made investigations on the disease in a cotton mill, stated that the scrotum came against part of the machinery which was covered with oil. Eighty per cent. of the cases in mule-spinners occurred on the left side and only 6 per cent. on the right side, by reason of the fact that the left side of the body came in contact with the faller bar. Under the conditions in which these men worked the scrotum was in a state of constant irritation from the mineral oil. The case under consideration, in his opinion, was absolutely due to the occupation. On an average there were seven cases of epithelioma of the scrotum per annum in the Manchester Royal Infirmary, and about half were mule-spinners. The hearing was then adjourned till May 22nd or June 20th, the date to be arranged later. From the annual report of the Operative Spinners' Amalgamation it is evident that the executive of the Amalgamation is giving careful attention to the subject. Numerous cases have been brought to light as a result of publicity. During the past year a joint committee representing the Amalgamation, the Federation of Master Cotton Spinners' Association, the Cotton Spinners' and Manufacturers' Association, and the Factory Department of the Home Office, drafted and issued a circular to operatives conveying certain simple measures of precaution.

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[1] THE LANCET, Feb. 2nd, p. 252.

Thompson v. *New South Wales Branch, B.M.A.*

The Judicial Committee of the Privy Council recently dismissed the appeal of Dr. G. S. Thompson, of Sydney, New South Wales, against a decision of the Supreme Court of New South Wales. The Supreme Court had set aside a verdict for £2000 damages obtained by Dr. Thompson against the New South Wales Branch of the British Medical Association which had expelled him from membership, as having been "guilty of conduct derogatory to the honour and integrity of the medical profession" of the State and calculated to bring the profession into contempt and to injure the welfare and interests of the branch of the Association. The conduct complained of by the Association arose out of a case of recurrent insanity in a woman who, Dr. Thompson alleged, had been improperly confined in an asylum and improperly treated by medical colleagues. He had, in the view of the Supreme Court of New South Wales, cast serious imputations upon the conduct of members of the medical profession in regard to their treatment of the patient, founded upon his statements, which, if proved, would have warranted their own expulsion from the Association. In bringing his action Dr. Thompson based his claims for damages largely upon allegations of injury to himself through the rules of the Association forbidding its members to extend professional recognition to an expelled member, which, it was argued, operated in restraint of trade and were void. Lord Atkinson, who delivered the judgment of the Judicial Committee, pointed out that if the aims of the Association were to be carried out as to maintaining a high standard of professional conduct, there must be power to expel a member whose conduct offended against the honour and interest of his profession. If a body such as that which expelled him made a decision which it had jurisdiction to make, founded upon adequate evidence, that decision, in the absence of fundamental error, could only be impeached on the ground of corruption or bias or malice affecting the decision. In his judgment he had referred to the fact that Dr. Thompson had submitted himself to the rules of the Association in joining it originally.

Public Health Services.

INSURANCE MEDICAL SERVICE.

The Capitation Fee Settlement: Source of the New Funds.

AFTER all the winged words which have been uttered about raiding approved society funds and robbing insured persons of their "additional" benefits, it is interesting to note how the capitation fee of 9*s.* is to be provided. The source of the balance required to make up the fee from the sum of 7*s.* 3*d.* allowed by the Insurance Act to the 9*s.* granted by the Court of Inquiry is disclosed in the Bill introduced on March 31st by the Minister of Health (see Parliamentary Intelligence, THE LANCET, April 5th, p. 732). The dispute between the doctors and the approved societies as to who should pay the increased cost has been settled by the discovery of what may be called windfalls or unallocated reserves, on which the Government will draw for the purpose of increasing the medical benefit by the necessary sum. The increased cost, which is estimated at £1,350,000 per annum, is to be obtained from the unclaimed balance of insurance stamps and the excess interest earned on insurance funds. The first fund, which amounts to nearly £6,000,000, is due to the sale of stamps which since 1912 have never been claimed. The improvident people who bought these stamps have never joined an approved society, and hence no individual society can claim the money. The second fund is due to the fact that the Ministry was able during the war to invest the insurance funds at 6 per cent. and at that high rate of interest a fund accumulated which now stands at £2,000,000. The prescribed rate of interest being only 4½ per cent., there is a balance of 1½ per cent. to which the societies have no claim. The contention of the insurance medical service that the insurance funds were ample to provide what it considered an adequate capitation fee has been abundantly justified. The settlement is for three and possibly four years.

Ethical Committees in the Insurance System.

A new committee has been set up by the London Panel Committee for the purpose of carrying out the new duties allotted to panel committees under Article 28 (2) of the Medical Benefit Regulations (No. 2), 1923. This committee, styled the Ethical Subcommittee, is to consider all questions which come or are brought to the knowledge of the panel committee affecting the efficiency of the medical service. This is the first sign of the carrying out of an undertaking given by the insurance medical service to the approved societies that it would be responsible for the disciplinary control of the service to a much greater extent than heretofore.

Auto-Suggestion Outside the Range of Panel Practice.

At a recent meeting of the Lancashire Insurance Committee it was explained that a finding of the panel committee—to the effect that treatment of an insured person by auto-suggestion was beyond the competence of the ordinary practitioner and so outside the terms of his agreement with the insurance committee—did not imply expenditure on such treatment out of insurance funds. If the treatment was wished for in such cases and the medical man was willing to give it, it was treatment outside his agreement, and he could make his own terms with his patient with regard to it.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—The Ministry of Health announce that a Royal Charter has been granted for the incorporation of the Governing Body of the School, which is to be established as a result of the donation of $2,000,000 given by the Rockefeller Foundation for the purpose.

Correspondence.

"Audi alteram partem."

"BLIND CÆCOSTOMY."

To the Editor of THE LANCET.

SIR,—Mr. J. E. Adams's criticism of the operation of "blind cæcostomy" in your issue of April 5th will, I am sure, meet with considerable support among the younger surgeons, to whom falls the task of operating upon many of these cases of acute intestinal obstruction in old people. During two years of emergency operating at Guy's Hospital I developed an increasing aversion to this expedient, and this dislike is shared by my surgical contemporaries.

Mr. Adams has pointed out the occasional occurrence of a simultaneous obstruction of the large and small intestines by a growth, a condition which cannot be diagnosed without laparotomy, and in which a blind cæcostomy would not only be useless, but would allow the chance of a life-saving operation to slip by. A further disadvantage is that a second operation is always required if the patient survives, and that no data are available for the information of the patient or the guidance of the surgeon. Laparotomy allows us, if the growth be inoperable, to perform at once a permanent colostomy in the correct position, and if it be removable, to drain the intestine at a point which will best relieve the obstruction and facilitate subsequent resection. I do not believe that cæcostomy provides really efficient drainage of the colon except in its proximal half. I was deeply impressed by a case of acute obstruction due to a growth at the pelvi-rectal junction, which died from rupture of the bowel just above the site of obstruction four days after I had established a cæcostomy.

Where the obstruction is in the ascending or transverse colon cæcostomy is in any case the operation of choice, but the cæcum is often found distended almost to bursting-point with multiple linear ruptures of the peritoneal coat, and drainage is more easily, rapidly, and safely performed through a median incision into which the cæcum can be brought out and packed off, than through a small opening directly over it, which involves the risk of rupture and escape of highly toxic contents into the peritoneum. These cases die after the relief of the obstruction, in many instances, from a low-grade peritonitis due to the presence in the abdomen of infected fluid and blood which has exuded from the distended bowel. Blind cæcostomy will not avert this tragedy; laparotomy, on the other hand, allows gauze to be packed into the pelvis to mop up fluid while drainage is being established.

I do not believe that a rapid exploration under gas and oxygen carries greater risk to the patient than a blind cæcostomy, and it is undoubtedly a more surgical procedure.

I am, Sir, yours faithfully,
W. H. OGILVIE.

Wimpole-street, W., April 6th, 1924.

THE UNITED KINGDOM FREE HOSPITAL INSURANCE FUND:

A CORRECTION FROM KING EDWARD'S HOSPITAL FUND FOR LONDON.

To the Editor of THE LANCET.

SIR,—It has come to the knowledge of King Edward's Hospital Fund that a circular addressed to "Employers of Labour, Tradesmen, and Philanthropists" has been issued by the "United Kingdom Free Hospital Insurance Fund," 17, Ironmonger-lane, E.C. The second paragraph of the circular reads: "In a speech on 13th April, 1921, the Prince of Wales expressed a desire that the King Edward's Hospital Fund should be assisted through some means of insurance, and the present scheme has been outlined by the copyright holder of free insurance, the success of which has been phenomenal as evidenced by all the leading newspapers of to-day."

No such statement was made by His Royal Highness. The King's Fund published on April 13th, 1921, a report which mentioned insurance as a method that should be thoroughly explored. The King's Fund has since declared itself in favour of the general principle of schemes of mass contributions as suggested by Lord Cave's Committee, and this principle has already been adopted by various hospitals and by the Hospital Saving Association. But the scheme of the United Kingdom Free Hospital Insurance Fund is not one which the King's Fund could approve.

I am, Sir, yours faithfully,
SOMERLEYTON,
Hon. Secretary, King Edward's Hospital Fund for London.

Walbrook, E.C., April 7th, 1924.

THE PANCREAS AND DIABETIC METABOLISM.

To the Editor of THE LANCET.

SIR,—In THE LANCET of April 5th Prof. Horst Oertel has attacked the view that the islands of Langerhans are secretory units for purpose of an internal secretion and produce insulin. He has not brought forward any new work, but has restated the case against this view. He has, however, completely omitted all reference to the work of F. M. Allen (*Jour. Exper. Medicine*, 1920, xxxi., 593). Allen showed that when one-eighth of the pancreas of a dog was removed it was possible to produce definite changes in the β cells of the islands of Langerhans if the animal was overfed with either sugar or starch. The α cells of the islands and the cells of the acinous portion were quite unaffected. It would take too long to describe the experiments fully, but the work seems to show conclusively that there is a very close relation between the β cells and sugar metabolism.

I am, Sir, yours faithfully,
GEORGE GRAHAM.

Devonshire-place, W., April 5th, 1924.

NEGLECT OF THE EARLY SYMPTOMS OF INSANITY.

To the Editor of THE LANCET.

SIR,—A Royal Commission to study the administration of the Lunacy Laws being about to be appointed, the present seems an opportune occasion to draw attention to an important aspect of lunacy administration.

I have notes of 296 cases of suicide by persons sane and insane, and of murders by insane persons, including four cases where the crime was only attempted, reported in the press of England and Wales between Jan. 1st and March 13th, 1924—i.e., in 73 days, or one-fifth of the year. These figures, however, only give a rate of less than 1500 a year. Evidently they do not include more than one-third of the total number of suicides that have occurred, as statistics for the year 1921 show that 3759 suicides were reported in that year, besides 1187 other deaths by violence as to which open verdicts were recorded, many, if not nearly all, of which were due to suicide. Evidently two-thirds of the suicides occurring were not reported in the press, or were overlooked by my press-cutting agency. It is therefore probably justifiable to multiply my figures as regards suicides by three in order to arrive at the real facts.

The 296 cases reported may be classified as follows: Suicides, 274; joint suicides, 3; attempted suicide, 1; murders and suicides, 5; double murder and suicide, 3; treble murder and suicide, 1; suicides after attempted murder, 3; murders, 2; attempted murders, 2; attempted murder and attempted suicide, 1; murder and attempted suicide, 1. In all, 292 suicides and 17 murders, besides attempts, occurred in 73 days—

i.e., at the rate of 1460 suicides and 85 murders per annum. And, as stated above, the number of suicides was probably treble that number.

Signs of brain disorder, more or less definite, had been noticed *before* the crime in no less than 200 cases—i.e., in over two-thirds of the cases. Insomnia, great depression, pains in the head, moroseness, silence, "neurasthenia," fits, strange or changed demeanour, desire to die, and tiredness of life were among the commonest symptoms. But only 20 of these cases were reported to have been under medical treatment. Forty-three cases were reported to have been noticed to be very insane for some time previous to the crime, suffering from delusions or hallucinations, or behaving and talking quite insanely. Twenty-one were stated to have been formerly inmates of asylums.

The newspaper notices were usually very short paragraphs, and little information as to the circumstances of the case was furnished. If the official reports of the coroners' inquests were examined I have little doubt but that the existence of symptoms of brain disorder could be demonstrated in many others of these cases. In analysing these statistics the verdict of suicide during temporary insanity has been disregarded as evidence of insanity. Fifty of the cases of suicide had already shown their suicidal tendencies by previous attempts or threats or by expressing a desire to die.

Many of the causes to which the mental breakdown was attributed are very doubtfully correct. But in 69 cases the evidence appeared to show the cause fairly definitely as follows: Physical ill-health (various diseases), 17; excessive pain from cancer, &c., 3; influenza, 5; fracture of skull, 1; the result of air-raids (shock), 4; war (strain, disease, or injury), 9; drink, 1; domestic troubles, 8; love affairs, including seduction, 3; deaths of relatives, 7; financial difficulties, 3; poverty, 2; unemployment, 6.

The fact that the 200 persons mentioned in the statistics for 73 days as having shown signs of brain disorder before the crime, and perhaps 578 persons in the same period if we treble the figures of the suicides as suggested above, and doubtless five times as many in the whole year—i.e., nearly 3000 persons—were not placed under proper care in time to prevent their committing murder or suicide, seems to me extraordinary, and to suggest that there must be something seriously wrong with the Lunacy Laws or their administration.[1] Apparently the early stages of mental disorder, the condition in the majority of these cases, failed to receive adequate treatment. There is a very natural reluctance to proceed at once to the extreme measure of certification. Meanwhile the tragedy occurs, because short of certification no adequate steps can usually be legally taken, the law not allowing detention except after this drastic measure. The proposed Mental Treatment Bill is calculated to amend the present state of affairs. There are reasons, however, for thinking that no great improvement is to be expected until another radical change is made in procedure—viz., the withdrawal from the jury of the issue of insanity at all trials, and its reference to expert medico-psychologists.

The recent lunacy case, Harnett *v.* Bond and another, has intensified the already prevalent hesitation of doctors to certify insanity, especially in its earlier stages. Dr. H. Rayner points out in THE LANCET of March 15th that a private practitioner, not being a Government servant, should not be required to take any responsible part in carrying out an act prescribed by law, his duty consisting in advice as to the treatment necessary. He should not be held responsible for whatever action the authorities choose to take upon his opinion. The law, however, may object to accept certificates unless responsibility is cast on their framers. A solution of the question might be found by imposing the duty of certification on special medical officials, as it is an act prescribed by law. This proposal would also probably have the additional advantage that the official certifier would presumably be an expert medico-psychologist, as is not usually the case at present. The official would be responsible to his administrative superiors if he did not exercise due care.

The drawbacks of the jury system would, however, remain in criminal trials, in lunacy inquisitions and in civil actions.—I am, Sir, yours faithfully,

JOHN WARNOCK,
Late Director, Lunacy Division, Ministry
of the Interior, Cairo.

Addison-road, London, W., March 21st, 1924.

CERTIFICATES OF INSANITY.

To the Editor of THE LANCET.

SIR,—I apologise if I misunderstood Dr. Eager, but his first letter, following that of Dr. Rayner, did seem to suggest that professional etiquette forbade our revealing to certified patients the reasons for their confinement. In his letter last week he seems even to emphasise this position, for he says, "In other words, are they [certificates] not of the nature of confidential statements furnished by one doctor to another?" Dr. Eager refers to Dr. Macnamara's letter, which pleads for secrecy on therapeutic grounds, but does not indicate what classes of cases would be harmed nor what harm they would suffer through being shown their certificates. Dr. Macnamara appears to have in mind insanity with gross derangement of intellectual functions; but no one proposed to show these patients their certificates. There is, as he says, "no point in it," but equally there would be no harm. The cases that here concern us are the hypomanics and paranoiacs, and I should be interested to know precisely how Dr. Macnamara thinks these diseases would be aggravated by the procedure in question. Emphatic generalities are not sufficient; we want definite and reasoned objections, for it seems quite probable that an attempt might be made to enact that all patients must be shown their certificates. Even from the therapeutic point of view it seems to me that the balance of advantage is on the side of non-concealment.

I am, Sir, yours faithfully,
Perth, April 6th, 1924. IAN D. SUTTIE.

PREPARING HANDS AND GLOVES FOR OPERATION.

To the Editor of THE LANCET.

SIR,—In 1906, when the use of rubber gloves in surgery was becoming common in this country, I tried the effect of mechanically cleansing them under running water, the gloves being on the hands. After dipping the fingers into a mixture of pus obtained from a dental abscess and from an ischio-rectal abscess and thoroughly soiling them, I held them under a rose tap and worked the fingers against each other until all apparent trace of pus had disappeared. I then rubbed the fingers on agar plates. No growth was obtained with either the smooth or the crenated gloves, but after opening an abscess in a fat patient I found growth occurred. I tried this again but could never be sure of getting a sterile surface in a crenated glove covered with fat and pus, although the growths were few and small. Whether the fat dissolved the rubber or merely clung to it and anchored the bacilli I do not know. I have not repeated the experiments with a modern glove, but have frequently relied on them especially for examination and dressing.

The first thing we did on moving into our operation theatre at the 43rd General Hospital in Salonika was to improvise a rose tap and elbow-piece. In handling a large number of heavily infected cases in rapid succession with a small staff and overworked sterilising appliances the risk of trusting to mechanical cleansing by running water seemed to me to be far less than that involved in waiting for possibly more certain measures. The method is very useful also in dealing with a large complicated wound in which only partial excision as against complete excision is possible. The great saving of time and labour and the reasonable certainty of the surface of the rubber being sterile make all exact experiments to establish the degree of risk of great importance. The method will appeal to those who, like myself, prefer to have the interior of the glove dry, and not to use a glove put on full of water. Surgically the factors of new or old rubber, fat, mucus, fæcal material, and dead epithelium (which tends to stick to rubber) come in. Ether, petrol, turpentine, and other substances in common surgical use are solvents of rubber in greater or less degree. Different organisms may cling in unequal degree to the surface of the rubber.

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[1] While 22,740 persons were certified and treated in 1922 under the laws, nearly 3000 a year do not receive proper treatment and suffer violent deaths in consequence, besides killing their neighbours in many cases.

The trials suggested themselves to me when listening to Klein describing his experiments on testing oysters for typhoid. He washed the shells in a bath of running water. Anyone who has experimented with the dilution of coloured solutions knows how important it is to completely empty the bath of solution—that is to say, several complete emptyings and fillings yield a less coloured, final result than is obtained for the same added volume if merely run in and allowed to run out continuously. Washing gloves under a running tap approximates to the ideal in this respect as the volume held on the surface of the glove is relatively small. I am, Sir, yours faithfully,

Aberdeen, April 4th, 1924. G. H. COLT.

INSULIN BY THE SKIN AND MOUTH.

To the Editor of THE LANCET.

SIR,—With reference to the annotation with this heading in your issue of Feb. 23rd I should like to ask whether insulin has ever been tried by the rectum. If not, perhaps readers who are in a position to do so would try this route, giving watery or oily suspensions of small bulk after an evacuation of the lower bowel, and publishing their results.

I am, Sir, yours faithfully,
H. H. KING,
Major, I.M.S.

Central Research Institute, Kasauli,
March 20th, 1924.

Obituary.

FREDERICK WILLIAM HIGGS, M.D., M.R.C.P. LOND.

Dr. F. W. Higgs, medical officer to the Ministry of Health, whose death on March 26th we regret to announce, was born on May 18th, 1881, the eldest son of Dr. Augustus W. Higgs, of Chelsea. He entered St. George's Hospital in August, 1898, where he was a successful student and took several prizes, including the William Brown Scholarship and Exhibition. Qualifying L.S.A. in 1904, he held in succession the usual junior house appointments at the hospital and proceeded to the M.B., B.S. Lond. in 1906, gaining the M.R.C.P. in 1907, and his M.D. in 1911. After giving up residence at St. George's he held several of the junior appointments in the medical school, such as assistant curator of the museum and demonstrator of materia medica. He was one of the most efficient medical registrars that the hospital has had of late years, and on more than one occasion he undertook some of the duties of the dean or warden of the school as it was then termed, while he was for a short period temporary assistant physician to the hospital. On starting practice Higgs specialised in diseases of children and was for a time physician to the Belgrave Hospital for Children. He was a capable clinician, a careful and conscientious physician, and it was to the regret of his friends that he decided, about the year 1909, to give up consulting for departmental work, for which, it is true, his orderly and methodical mind was peculiarly adapted. He joined the Public Health (Education) Department of the London County Council and was for some years in charge of one of the London districts. On his return from the war he became a medical officer to the Ministry of Health.

From the days of his house surgeoncy Higgs had been keenly interested in military matters, and as major in the R.A.M.C. (T.F.) he was called up on active service at the outbreak of the war, but on account of an old cardiac lesion he was not allowed to go to the front with his casualty clearing station, in the details of the organisation of which he had taken endless pains. In 1915 he was considered fit for active service and served in France for three years, was twice mentioned in despatches, and received the C.B.E. Early in 1920 he was gazetted as colonel A.D.M.S., 2nd London Division. He had recently been appointed county director for London on the Central V.A.D. Council. Higgs took up the livery of the Society of Apothecaries in 1919. A keen Freemason, he had passed the chair in the Lanesborough Lodge in connexion with St. George's Hospital, in which lodge he had been initiated in 1907.

The funeral service took place on March 29th and was conducted with full military honours.

Dr. Higgs married Dorothy, daughter of Dr. J. Walter Scott, of Chandler's Ford, Hants, and late of Tulse Hill, and had two daughters; to his family and to his parents we extend our sincere sympathy in their bereavement.

FREDERICK WOMACK, M.B., B.Sc. LOND.

Dr. Womack's death on March 11th removes one who made it his life work to make ancillary science acceptable to the medical student, a not inconsiderable task in these days. Born in 1857, Frederick Womack entered St. Bartholomew's Hospital at the age of 21, and remained associated with the hospital until the time of his death. He graduated B.Sc. honours in 1881 and M.B. Lond. in 1884. In the former year he was appointed teacher of mathematics to the matriculation class which was then held and became demonstrator of what was still known as "natural philosophy." In 1892, when a separate lectureship in physics was instituted, Dr. Womack became lecturer. He was also lecturer in physics at Bedford College for Women, consultant toxicologist to a number of London coroners, and found time to lecture for the University Extension. He was an ardent national volunteer, and during the war visited France to lecture to troops in rest camps. Dr. Womack's attractive personality gained him a wide circle of friends, to whom his ability in music and story-telling made appeal. His long and painful illness was borne with fortitude.

WILLIAM ALFRED WILLS, M.D., F.R.C.P. LOND.

Dr. W. A. Wills, consulting physician to the Queen's Hospital for Children, died at Rotherhill, Midhurst, on April 1st, aged 61. Born in 1863, he was a son of the late Sir Alfred Wills, who had a distinguished career at the Bar. Dr. Wills received his professional education at Westminster Hospital, and qualified M.R.C.S. Eng. in 1884. A year later he took the degree of M.B. Lond. with honours. In 1890 he proceeded to the M.D. Lond., and in 1902 he was elected a Fellow of the Royal College of Physicians. He was for some time physician at St. Marylebone General Dispensary and at Westminster Hospital, and at the latter was the author of the annual reports of the Medical Register of the Hospital from 1888 to 1892. He was afterwards appointed physician at what was then called the North-Eastern Hospital for Children. During his long career of activity in London he found time to contribute many and various articles to medical literature. In 1897 a monograph by him on Diseases of the Mouth appeared in Allbutt's "System of Medicine," and in 1901 he wrote on Mountain Sickness in Quain's "Dictionary of Medicine." Some of his work appeared in THE LANCET in 1896 and in

1901. On his retirement from professional activities he settled down in Midhurst, Sussex, where he identified himself with all branches of public work. He became a member of the West Sussex County Council, was placed on the Commission of the Peace for West Sussex, and was one of the justices appointed under the Lunacy Act as a visitor to asylums. Nursing work always claimed his enthusiastic support, and by his death the West Sussex Nursing Association has lost one of its valued helpers and advisers. Dr. Wills was a man of generous nature who made many friends, not least among the poor. Of his recreations, the chief was Alpine climbing, and he acted as secretary of the Alpine Club, of which his father was one of the founders. His funeral, which was largely attended, took place at Stedham on April 4th.

WILLIAM HENRY COATES, M.B. DURH., M.R.C.S. ENG.

WE regret to record the recent death, at his residence, Bleak House, Patrington, Holderness, of Dr. W. H. Coates, one of the best-known medical men in the East Riding of Yorkshire. Born in York over 60 years ago, his public record as physician, surgeon, barrister, county councillor, and administrator must be well-nigh unique. He studied at the University of Durham, where he took the M.A. and M.B. in 1888, and where he acted as a demonstrator of anatomy, and later at the London Hospital he was a demonstrator in histology. In 1889 he became M.R.C.S. and L.R.C.P. Lond. In his spare time he qualified as a Barrister-at-law, and was called to the Inner Temple in 1899. His professional appointments were many and varied, and included that of medical officer of health for Patrington, public vaccinator, chemical analyst, medical officer to Linsdale's Hospital, certifying factory surgeon, and surgeon to Trinity House. He was also a member of the North Sea Fisheries Commission, and consulting surgeon to Lloyds and the U.S.A. Consulate. During the war he was medical officer for two hospitals and several military camps in South Holderness with 1800 men in his charge, and he acted as local food and fuel controller. He was interested in politics, and on two occasions he refused invitations to be nominated as a candidate for Parliament. In his early years in London he had many friends amongst journalists, and was on occasion an active worker and writer of leaders and a dramatic critic. He also took a keen interest in chemical matters, and in 1891 published a book entitled "Food: Its History and Adulterations," and in 1899 contributed an article to THE LANCET on Poisoning by Mercuric Chloride.

Dr. Coates was a man of brilliant and versatile powers, and his death will be a loss to South Holderness, where he had many friends.

EDWIN CLAUDE TAYLOR, M.D., M.S. LOND., F.R.C.S. ENG.

Dr. Claude Taylor, who died at Birmingham on March 29th in his fifty-fourth year, was a man of very high academic attainment who deliberately chose to go into general practice as a form of social service. He was educated at Caius College, Cambridge, passing on to Guy's Hospital for his clinical work. After qualifying in 1894 he held appointments as house surgeon and resident obstetrician at Guy's and assistant medical officer at the London Temperance Hospital. During this period he took in succession the M.D. Lond., F.R.C.S. Eng., and M.S. Lond. In 1898 he settled in Hampstead, where he acquired a very large general practice, the claims of which did not prevent him finding time for work in connexion with child welfare and temperance. He was visiting medical officer to the Hampstead Infirmary, where he originated the idea of the nurses being able to qualify for their full certificate with Poor-law hospital experience. During the war the infirmary became a military hospital to which Dr. Taylor acted as visiting physician. Owing to failing health he gave up practice in the autumn of 1922 and sought on the Riviera a renewal of vigour which unfortunately did not return. At a memorial service held at the Friends' Meeting House, Bourneville, on April 2nd, Sir George Newman said: "The love of a medical man for his craft must always be associated with love of humanity and that Dr. Taylor had in an exceptional degree; and so he became a great doctor, a great physician, and a good surgeon." Mr. W. McAdam Eccles writes: "As one who had a very close professional and friendly relationship with Dr. Claude Taylor, I am proud to bear testimony to the fine example he set. He was untiring in his care of patients, skilled in diagnosis, sound in treatment. He was ever ready, while holding some advanced views on certain matters of medical politics, to discuss and argue differences with an open mind and restraint. He was keen on the moderate and scientific view of the alcohol question, and did much to help forward the dissemination of sane knowledge thereon. His loss will be felt widely, not least by those with whom he was professionally connected."

Dr. Taylor married Miss Huldah Southall, of Birmingham, and had five children, of whom two sons are following the medical profession. Much sympathy is felt with his family in their loss.

THOMAS RIDGE JONES, M.D. ABERD., M.R.C.S. ENG.

Dr. Ridge Jones, whose death took place on April 4th after several years of ill-health, was intimately connected with the Victoria Hospital for Children in London for over 40 years. A son of Thomas Jones, of Rhyl, North Wales, he was born in 1840, and obtained his early education at the Liverpool Institute. He proceeded to the study of medicine at the medical colleges of Middlesex and St. George's Hospitals. As a student Dr. Jones had a brilliant career, and whilst at the Middlesex Hospital he gained the Governors Prize "for the most distinguished student at the Middlesex Hospital." He qualified L.S.A. in 1860 and M.R.C.S. Eng. in the following year. Continuing his medical studies, he went subsequently to Aberdeen University, where, in 1869, he graduated M.B. and in the following year gained his M.D. His first appointment brought him back to London to be resident medical officer at St. George's Hospital, and after filling this post for 11 years he joined the staff of the Victoria Hospital for Sick Children which had recently been founded. To Dr. Jones's support and service the Victoria Hospital owes not a little of its present prosperity, and during the 26 years in which he acted as hospital physician he saw many improvements and extensions take place. At the termination of his 26 years' service as acting physician to the hospital he was appointed as consultant. Of Dr. Jones's contributions to medical literature may be mentioned a study of an outbreak of small-pox which occurred in St. George's Hospital and published in the hospital reports. He was specially interested in the study of cerebral hæmorrhage, of which malady he himself was the victim some three years ago and which finally caused his death. Dr. Jones had a large consulting practice apart from his hospital duties; the care of children was always his first interest. He never actually retired, but latterly was obliged to lead a less strenuous life, although his faculties remained unimpaired. In 1876 he married Ruth, daughter of Dr. Joseph Ridge. To his widow and family we extend our sincere sympathy.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held to-day (Friday) at the Miller General Hospital, Greenwich, at 8.45 P.M., when Mr. P. P. Cole will give a communication on the Surgery of the Face and Jaws. The President, Dr. E. G. Annis, will occupy the chair.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Protection Against Lead Poisoning.

ON April 3rd Mr. HENDERSON (Home Secretary) presented a Bill "to make better provision for the protection against lead poisoning of persons employed in painting buildings." The Bill was read a first time.

National Health Insurance (Cost of Medical Benefit) Bill.

The National Health Insurance (Cost of Medical Benefit) Bill was considered by Standing Committee "C" of the House of Commons on Tuesday, April 8th. Mr. A. SHORT presided.

Mr. HARVEY moved an amendment to delete paragraph (*b*) of Subsection 2 of Clause 1 in order to elicit from the Minister of Health some assurance that the Government would see that the interests of those who did not belong to approved societies were adequately protected.

Mr. WHEATLEY said that if he accepted the amendment it would upset the scheme of the Bill. But there was no danger at all of any insured people suffering from the scheme of finance contained in the Bill. The Government had gone into the matter very carefully and they found that after making all essential reserves—and even generous reserves—they would have plenty of money for the purpose.

The amendment was by leave withdrawn.

On the question that the Bill be reported without amendment to the House,

Sir KINGSLEY WOOD asked the Minister of Health if he would explain to the Committee the exact position in regard to the setting up of the Royal Commission to examine the whole system of national insurance.

Mr. WHEATLEY said that the negotiations for setting up the Royal Commission were very well advanced. He had submitted the terms of reference to the approved societies and the doctors and they had agreed to them. They had now to be submitted to another body before it would be proper to report them to the public, but he anticipated no difficulty in the matter. With regard to the personnel of the Commission hon. Members would realise that he was not alone responsible for determining that. He had to negotiate with the people interested and receive the authority of the Government as a whole. But there again he did not think there would be any difficulty, and he anticipated no delay.

Sir KINGSLEY WOOD: Will the personnel include representatives of the various interests affected?

Mr. WHEATLEY: You are raising a point which is one on which I might very easily slip.

Mr. PERRY suggested that the Commission ought to consider whether the method of stamping cards should be continued under any revised scheme of national health insurance administration.

Sir W. JOYNSON-HICKS urged that the Commission should be an impartial body. When he was Minister of Health he received the consent of a very well-known man, not of his own political persuasion, to occupy the position of chairman. It was of great importance that the tribunal should command the confidence and support of the House of Commons and the country generally.

Mr. FALCONER said that there was a great danger that people would be put on the Commission who were most excellent members of the community, but who had no real knowledge of the problems of national insurance. Under those circumstances the work of the Commission would be an almost hopeless one. He agreed that the chairman ought to be a man outside any of the interests affected.

Mr. B. TILLETT said that he hoped that the Minister would not appoint a Commission of experts.

Mr. MASTERMAN pointed out the desirability of urging the Commission to report as promptly as possible.

Lt.-Col. FREMANTLE said that while he was not qualified to speak on behalf of the doctors, he believed that their position was this: the medical profession would not wish to be represented on the Commission if it was decided that it should not be a Committee of experts, but they would raise strong objection if, after that decision had been taken, representatives of approved societies and so forth were included. The doctors hoped that, whether experts were to be placed on the Commission or not, the profession would be treated fairly and that the whole matter would be given a considered and impartial judgment. If that were so, the doctors had perfect confidence in the justice of their case where it came into conflict with the views of other persons.

Mr. WHEATLEY, replying to the points raised, said that he could not promise that the Commission, however it was selected, would report in a very short time. The question which it would have to consider was a very complicated one and the inquiry would take time. As regarded the suggestions which had been made he would give due weight to all of them, but the Committee must recognise that a storm would break around his head immediately he had appointed the Commission, no matter what course he adopted.

The Committee stage of the Bill was concluded.

HOUSE OF LORDS.

TUESDAY, APRIL 8TH.

Therapeutic Substances Bill.

Earl DE LA WARR, on behalf of the Ministry of Health, moved the second reading of the Therapeutic Substances Bill, a measure to provide for the regulation of the manufacture, sale, and importation of vaccines, sera, and other therapeutic substances. He said the measure was non-contentious.

The substances to which the Bill applies are vaccines, sera, toxins, antitoxins and antigens, salvarsan (dioxy-diamino-arseno-benzol-di-hydrochloride) and analogous substances used for the specific treatment of infective disease; preparations of the specific antidiabetic principle of the pancreas known as insulin, and preparations of the posterior lobe of the pituitary body intended for use by injection.

Clause 1 provides that no person shall manufacture for sale any of these substances unless he has a licence granted by the Minister of Health, the Scottish Board of Health, or the Minister of Home Affairs for Northern Ireland. Applicants for licences must satisfy the licensing authority that the conditions under which the therapeutic substances are to be manufactured comply with the regulations under the Act. Licences may be revoked for failure to comply with the conditions attaching to them, and the regulations under the Act as to standards of strength, quality, and purity. Nothing in the section shall apply to the preparation by a registered medical practitioner of the substances in question. Clause 3 places restrictions on the importation of such substances into Great Britain or Northern Ireland. Clause 4 provides for the establishment of a joint committee consisting of the Minister of Health (chairman); the Secretary for Scotland; and the Minister of Home Affairs for Northern Ireland; and also an advisory committee to assist the joint committee, one member appointed by the Minister of Health, who shall be chairman, one by the Scottish Board of Health, one by the Minister of Home Affairs for Northern Ireland, one by the Medical Research Council, one by the General Medical Council, and one by the Council of the Pharmaceutical Society of Great Britain. Clause 5 gives power to the joint committee, after consultation with the advisory committee, to make regulations for various purposes.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 2ND.

Inquiry into Lunacy Laws.

Mrs. WINTRINGHAM asked the Minister of Health what interests would be represented on the committee appointed to inquire into the Lunacy Laws.—Mr. GREENWOOD (Parliamentary Secretary to the Ministry of Health) replied: It is not intended that the body appointed to inquire into the Lunacy Laws shall be composed of representatives of interests. The aim of the Government will be to set up a small impartial body of persons qualified to deal with the legal and medical issues and the questions of public policy involved in this inquiry.

Village Settlements for Tuberculous Men.

Mr. PHILIP OLIVER asked the Minister of Health which village settlements for tuberculous ex-Service men had been allotted grants to meet the cost of the erection of cottages and the amounts of such grants; why no grant had been made to the East Lancashire tuberculosis colony at Barrowmore; and would he consider the making of such a grant in the immediate future.—Mr. GREENWOOD replied: The village settlements in question are at Papworth and Preston Hall, and £10,000 has been allotted to each for this purpose. As regards Barrowmore, my right hon. friend understands that at the suggestion of one of his predecessors the Joint Finance Committee of the British Red Cross Society and the Order of St. John of Jerusalem have voted the sum of £10,000 to the East Lancashire Tuberculosis Colony in order that cottages may be provided there for tuberculous ex-Service men. My right hon. friend has called for a report as to the present position at Barrowmore and the need for any further development.

Local Tribunals under Midwives Board.

Mr. SHORT asked the Minister of Health whether, seeing that registered midwives who contravene the regulations are summoned to appear before a tribunal in London, entailing great expense to the person so appearing, he would consider the appointment of area tribunals to deal with such cases.—Mr. Greenwood replied: The duty of deciding upon the removal from the roll of midwives of the name of any midwife for disobeying the rules and regulations of the Central Midwives Board, or for any other misconduct, is imposed by Statute upon that Board, and my right hon. friend does not think it would be possible to arrange for such cases to be dealt with by area tribunals. Many disciplinary cases of a minor character are dealt with locally by the local supervising authorities. I may add that the Central Midwives Board are empowered to defray the expenses incurred by any midwife who may be required to appear before them in her own defence.

Government Lymph Establishment at Hendon.

Mr. Black asked the Minister of Health how many calves at the Hendon Institute were under vaccination at the same time, and what was the source of the lymph with which they were vaccinated.—Mr. Greenwood replied: The number of calves vaccinated week by week at the Government lymph establishment varies according to the demand for lymph, the supplies in stock, and other circumstances. The lymph at present used at this establishment is a strain of lymph obtained many years ago which has been carried on by repeated transference from calf to calf.

Medical Benefit for Dependents of Insured Persons.

Mr. Nixon asked the Minister of Health if he would arrange that the question of providing medical benefit under the National Health Insurance system for the wives and children of insured persons be inquired into by the Royal Commission which he proposed to set up.—Mr. Greenwood replied: My right hon. friend has no doubt that the subject referred to by the hon. Member will be included amongst the matters which will come under the consideration of the Royal Commission.

Cancer in Birmingham.

Mr. Alfred T. Davies asked the Minister of Health whether his attention had been directed to the appointment of a special committee by the Birmingham City Council to inquire concerning the prevalence of cancer in the city, the facilities for treatment of the disease, and the steps which might usefully be taken by their council to help cancer sufferers; whether similar committees had been appointed in other counties, cities, or towns; whether he approved of such local committees, and would give them encouragement where possible; and whether he would direct the attention of county, city, and town councils and other public bodies to the action taken at Birmingham.—Mr. Wheatley replied: The answer to the first part of the question is Yes. My Departmental Committee on Cancer is in touch with the medical officers of health of several other towns with a view to the prosecution of similar inquiries either through special committees or otherwise, as may be most suited to the area concerned. The formation of such local committees has my cordial approval, and I may refer to the suggestions on this point contained in the memorandum on cancer issued by my predecessor to all local authorities in England and Wales in August of last year.

Tuberculin-tested Milk.

Mr. Mills asked the Minister of Health what number of licences had been granted during each of the years 1920, 1921, 1922, and 1923 to producers, to retail distributors, and to wholesale distributors of milk, to use each of the following designations: Certified, Grade A tuberculin tested, and Grade A pasteurised.—Mr. Greenwood replied: According to the records in the department, the numbers of licences in operation at the end of each of the years 1920–23 were as follows:—

—	1920.	1921.	1922.	1923.
Certified—				
Producers	9	23	41	55
Shops	10	49	170	598*
Grade A (tuberculin tested)—				
Producers	11	15	22	46
Bottling establishments ..	8	11	17	26*
Shops				118*
Grade A—				
Producers	—	—	—	50*
Bottling establishments ..	—	—	—	24*
Shops	—	—	—	115*
Pasteurised—				
Pasteurising establishments ..	—	—	—	57*
Shops	—	—	—	107*

Up to the end of 1922 the special designations were "Grade A (Certified)" and "Grade A." The conditions applying to these designations were nearly the same as those now applying to "Certified" and "Grade A (Tuberculin Tested)" respectively. The licences whose numbers are marked with an asterisk were issued by local authorities and the numbers given may possibly not be quite complete.

Health Insurance Administration.

Sir Rowland Blades asked the Minister of Health the actual amount expended on administration and other costs of working by the approved societies in the year 1922; the actual amount expended on administration by the National Health Commission in the same year; the amount of any other expenditure incurred in the administration of the Act by the insurance committees or other bodies, excluding payments to medical practitioners; and what rates these expenses are to the actual contributions from all sources, save Government grants in aid, received during the year.—Mr. Wheatley replied: The amounts expended on administration of National Health Insurance in England and Wales in the year 1922 were as follows: Approved societies, £2,913,000; Ministry of Health and other Government departments, including National Insurance Audit Department and Government Actuary's Department, £1,010,000; insurance committees, £378,000. Excluding Government grants in aid received during the year from the actual contributions and expenditure of Government departments on administration, the ratio of administration expenditure to contributions from all sources is 12¾ per cent.

Joint Advisory Committee on Milk Production.

Mrs. Wintringham asked the Minister of Health what interests were represented by the various members of the joint committee appointed to advise on matters concerning the production, handling, and distribution of milk and dairy produce.—Mr. Greenwood replied: The bodies represented on the committee are the National Farmers Union, the National Federation of Dairymen's Associations, the Parliamentary Committee of the Co-operative Congress, the National Association of Creamery Proprietors and Wholesale Dairymen, the National Clean Milk Society, and the London and Provincial Master Dairymen's Association.

THURSDAY, APRIL 3RD.

Richmond and Orpington Hospitals.

Mr. Somerville Hastings asked the Minister of Pensions the number of empty beds in Richmond Park and Orpington Hospitals respectively, and whether and how he proposed to utilise these hospitals in future.—Mr. F. O. Roberts replied: The numbers are 36 and 67 respectively, all of which are, however, allocated to patients about to commence treatment. It may not be necessary to retain the hospital at Richmond Park after next autumn, but there is at present no prospects of the accommodation at Orpington ceasing to be required by my department.

Ex-officer's Removal to Mental Hospital.

Mr. Costello asked the Minister of Pensions whether he received a communication, dated Feb. 29th, 1924, from a pensioned ex-officer, at that time an inmate of Haydock private asylum, Newton-le-Willows, Lancashire, in which that officer asked for a medical examination and inquiry into his case with a view to showing that he was perfectly sane; what was the reason why this officer was, in October, 1923, summoned to a Ministry of Pensions hospital at Knotty Ash, Liverpool, in order to proceed to the Isle of Wight for convalescence, and that instead of that he was taken to the above-named asylum without his wife or any of his relatives being informed of his removal thereto; why was he detained as a lunatic until March 4th, 1924, upon which date he escaped and, after remaining in seclusion for the statutory interval of 14 days, recovered his freedom; is he aware that this officer was awarded 100 per cent. disability for severe wounds and that the pension is now being held up, if not entirely stopped; and would he cause inquiries to be made with a view to taking action for remedying these matters.—Mr. F. O. Roberts replied: I regret to say that this officer, who had been awarded disability retired pay at the maximum rate, had, after admission to Knotty Ash Hospital, to be transferred, under an urgency order to a mental hospital. The proposed convalescent treatment could not therefore be proceeded with. As the hon. Member states, the officer escaped from the mental institution, and as this happened about the time of receipt of the letter referred to in the first part of the question, the medical examination he asked for could not be made. With regard to the last part of the question, whilst the officer was in the mental hospital arrangements were made for payments due to him to be made to his wife, but in the present circumstances payment will be made to him direct.

Military Hospital at Craigleith.

The Earl of Dalkeith asked the Minister of Pensions whether it was the intention of the Government to close down the military hospital at Craigleith; and what were their reasons for doing so.—Mr. F. O. Roberts replied: In view of the decline in the requirements of my department for accommodation for in-patients in Scotland I am making arrangements to give up this hospital next autumn.

Medical Evidence in Final Pension Awards.

Sir ROBERT ASKE asked the Minister of Pensions what kind of evidence would be accepted by him as showing that an award was erroneously declared final; whether medical evidence was essential for this purpose; and whether he would pay the applicant's doctors' fees for examination and report as to errors in awards.—Mr. F. O. ROBERTS replied: The question whether an award was made final in error owing to incorrect diagnosis will be determined on the results of examination by a Special Medical Board of the Ministry. Ordinarily it is anticipated that such cases, which are not numerous, will be discovered in the course of medical treatment by the Ministry.

MONDAY, APRIL 7TH.

Medical Services in Bengal.

Lieut.-Colonel HOWARD-BURY asked the Under-Secretary of State for India whether he was aware that owing to the reduction in the estimates for the educational and medical services in Bengal, passed by the Bengal Legislative Council, the Government were now forced to dispense with the services of all officers in those departments whose salaries had not been voted, and that 700 had been dismissed; and what steps it was proposed to take to carry on these services. —Mr. RICHARDS replied: The facts are substantially as stated by the hon. and gallant Member. The precise number of officers who have been given notice, three months in every case, is 703. My noble friend, the Secretary of State, has the matter under consideration.

Experimental Inoculations of Animals.

Mr. PETHICK LAWRENCE asked the Minister of Agriculture whether the proposal to bring all experimental inoculations of animals with the living virus of certain highly dangerous diseases under the effective control of the Board of Agriculture, originally suggested in the Board's report for the year 1919, had been considered afresh: and whether anything had been done in the matter.—Mr. BUXTON replied: The proposal referred to has been considered from time to time, and it has come up for special consideration at the present moment in connexion with the investigation of foot-and-mouth disease. I am advised that experiments with the virus of this very contagious disease should be controlled, and measures will be adopted to give effect to this view.

Epizootic Abortion in Cattle.

Mr. BLACK asked the Minister of Agriculture whether he could give any figures showing the number of heifers and cows inoculated against epizootic abortion, and the results of such inoculations during the last three years.—Mr. BUXTON replied: Such information as it has been possible to collect with regard to these inoculations is not complete or sufficient upon which to base a general conclusion. I understand, however, that in a number of selected cases particulars are being collected and I hope that it will be possible to make these the subject of a report at a later date.

Guardians and Mental Hospitals.

Mr. ALFRED T. DAVIES asked the Minister of Health whether, by an Order in Council or other means, boards of guardians might have direct representation on the committees of management of the mental hospitals in the areas such guardians represent; and whether he would favourably consider the question at an early date.—Mr. WHEATLEY replied: The answer to the first part of the question is in the negative, and I doubt if an alteration of the law in the direction suggested is likely in the immediate future.

TUESDAY, APRIL 8TH.

Recruitment of Junior R.A.M.C. Officers.

Lieut.-Col. ASSHETON POWNALL asked the Secretary of State for War what action it was proposed to take to recruit junior officers for the Royal Army Medical Corps, in view of the present serious shortage.—Mr. S. WALSH replied: The matter is receiving consideration, but I am not yet in a position to make a statement regarding it.

ROYAL EASTBOURNE EYE HOSPITAL.—The annual report of this institution submitted to the annual meeting of the subscribers on March 28th notified that during the year 1923 the extension of the hospital premises had been completed, and the institution was now in such a state of efficiency as would enable it to compare favourably with other ophthalmic hospitals. The chairman paid a tribute to the work of the hon. surgeon, Mr. Geoffrey B. Lowe, to whose economical management, aided by the matron, the present sound condition of the finances was due. New cases during the year numbered 1177, as against 848 in 1922, despite the difficulties in accommodation and the absence of an operating theatre, disadvantages which had now disappeared with the inauguration of the new ward and operating theatre in the enlarged premises.

Medical News.

UNIVERSITY OF LONDON.—A course of lectures on Medical Hydrology, supplemented by demonstrations and clinical lectures at a British spa, has been arranged by the Board to promote the extension of University teaching in coöperation with the Committee for the Study of Medical Hydrology in Great Britain. The course will begin on May 6th, and end on May 9th, 1924. Dr. R. Fortescue Fox, Prof. M. S. Pembrey, Dr. S. Judd Lewis, Dr. David Brown, Dr. Charles W. Buckley, Dr. G. L. Kerr Pringle, and Dr. W. Bertram Watson will take part in the course, and a visit will be paid to Bath on May 8th, returning May 9th. All communications with reference to the course should be addressed to the hon. secretaries, Committee for Study of Hydrology, care of University Extension Department, at the University of London, South Kensington, S.W. 7, where the lectures will for the most part be delivered.

ROYAL SOCIETY.—The President and Council of the Royal Society have received from a donor who has desired to remain anonymous a gift of £10,000 for the prosecution of original research in medicine, with special attention to tropical diseases in British possessions, and to cancer and tuberculosis. They have also received from Messrs. Brunner, Mond, and Co. a gift of 500 guineas, to be used for the publication of the results of scientific research in chemistry, physics, and similar sciences.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—At a meeting of the President and Fellows of the Royal College of Physicians of Ireland held in the College Hall, Kildare-street, Dublin, on April 4th, Surgeon Vice-Admiral Joseph Chambers, M.D. Dub., C.B., C.M.G., hon. physician to H.M. the King, Director-General of the Medical Department of the Royal Navy, was admitted an Honorary Fellow of the College.

ROYAL MEDICAL BENEVOLENT FUND.—The annual meeting of the supporters of the Fund will be held at the rooms of the Medical Society of London, 11, Chandos-street, W. 1, at 5.30 P.M., on Tuesday next, April 15th, when the officers and committee for the ensuing year will be elected and the annual report and statement of accounts for 1923 received.

BENEKE CENTENARY.—On March 27th, the hundredth anniversary of the birth of Friedrich Wilhelm Beneke was celebrated at Bad Nauheim, where his memory is held in high esteem. Beneke was born at Celle in Hanover, became professor of medicine in the University of Marburg, and physician to the mineral springs of Nauheim, where he discovered the beneficial action of mineral baths on the heart and blood-vessels. For several years he was chief physician to the German Hospital in London, when he became closely acquainted with the organisation of hospitals and charitable institutions of the metropolis, knowledge which had its effect on his later work.

DR. SCHWEITZER'S RETURN TO AFRICA.—Dr. Albert Schweitzer, doctor of theology and doctor of music, as well as doctor of medicine, of Strasbourg, has just returned to Africa to take up again his work as a medical missionary. His sojourn in Europe during the war gave him the opportunity of lecturing and playing—he is a brilliant organist and interpreter of Bach—in this and most of the chief countries on the continent in aid of his African work, which he thus supports by his own efforts. Dr. Schweitzer paid a private visit to England last December when his suggestions that he should found, if possible, a second hospital on British territory—his original hospital is at Lambarene in the French Gaboons—were welcomed by the Colonial Office. He is now looking for a suitable site in the British Cameroons.

DONATIONS AND BEQUESTS.—By the will of the late Alderman Dr. Thomas William Thursfield, of Leamington Spa, the testator left £600 to the Warneford and South Warwickshire Hospital, Leamington, upon trust for investment and to apply the income in the improvement of the teaching of the nurses trained in that hospital, any balance being used for a medal or prize to the nurse passing the best examination, and £450 to the University of Aberdeen upon trust for investment and to apply the income for a Dr. Thursfield Gold Medal (or other award) for the best thesis for the degree of Doctor of Medicine.—Subject to certain contingent conditions the late Mr. E. Huntley of Branksome Dorset, who left estate of the value of about £35,000, bequeathed a large residue to be equally divided between the Royal Infirmary and the Eye Infirmary, Sunderland.

Sir H. M. Mallaby-Deeley has offered to double all contributions received for the Westminster Hospital from April 2nd to June 30th, up to a total of £16,000.

Dr. F. J. Willans, M.V.O., has been appointed Surgeon Apothecary to His Majesty's Household at Sandringham in the place of Sir Alan Reeve Manby, K.C.V.O., who has resigned.

Summer-time in Great Britain will take effect on the night of Saturday–Sunday, April 12th–13th, when clocks should be advanced one hour. In France, Belgium, and Holland summer-time took effect on the night of March 29th–30th.

King Edward VII. Hospital, Windsor.—The foundation-stone of Nurses' Hostel of the hospital was laid on April 5th by H.M. Queen Mary. The hostel is being erected as a war memorial, and in memory of Sir William Shipley, the late chairman of the hospital.

Cancer Hospital.—The annual dinner of the medical staff of this hospital was held at the Langham Hotel on April 2nd, with Mr. W. Ernest Miles presiding. Of the company present (about 80) more than half were guests. After the loyal toast had been honoured Mr. H. J. Waring, Vice-Chancellor of the University of London, gave the toast of the Hospital. He briefly outlined the history of its foundation in 1851 when cancer patients were not readily admitted to the general hospitals, and passed in review the recent advances made in the surgery of cancer. He discussed the ideal hospital buildings for such a purpose and concluded with a warning that in spite of all the research into the origin of cancer the only hope of cure still lay in surgery. In reply, the Chairman pointed to projected alterations in the buildings which would satisfy Mr. Waring's ideals. Though much effort and money was lavished on the electro-therapeutical department it was with the object of relieving suffering, for it was realised that at least up to the present no cures had been obtained. Sir Thomas Horder proposed the Health of the Guests, and Viscount Cave, Sir William Hale-White, and Captain Dyer, chief of the London Fire Brigade, replied. The final toast of a most successful dinner was that of the Chairman, proposed by Mr. Jocelyn Swan.

Royal West Sussex Hospital, Chichester.—Although the balance-sheet presented at the annual meeting of the governors on April 1st showed a small balance in hand, the financial position, it was explained, was a cause of some anxiety owing to the lack of definite annual subscribers. Since 1914 the annual subscriptions had been up to £1700, but they had now dropped to £1500. Despite the ever-increasing growth of the work, it was announced by the chairman that during the last four years expenditure had decreased by £3000. One very satisfactory feature of the year 1923 was the result of the Alexandra Day collection. In-patients during the year numbered 578, and out-patients 1761, who made 6713 attendances. In addition there were 1020 attendances in the X ray department, and 2509 attendances of patients for electrical massage. The great increase in the work of the X ray department had called attention to the lack of accommodation and a new arrangement was under consideration. It was also stated at the meeting that the governors were endeavouring to initiate a scheme in connexion with the training of nurses, so that nurses who went to the smaller hospitals could count two years' work there towards their certificate.

Royal Victoria Hospital, Belfast.—At the annual meeting of the hospital held on March 27th the report showed that during the year 1923 there were treated 4643 patients in the wards and 37,736 in the out-patient department. The average daily number of beds occupied was 325. The number of surgical operations performed was 2676, with a mortality of 3·44 per cent. The total number of deaths during the year was 276, which gives a mortality of 5·94 per cent. In the pathological department 1582 examinations were recorded. A follow-up department has been established to record the after-history of patients who have been treated or operated upon in the hospital. Every first and third Wednesday a laboratory meeting of the staff has been held, at which questions of clinical and pathological interest have been discussed. More than 60 diabetic patients have received treatment by insulin with very gratifying results, and in other specialised departments there was a considerable increase in the number of patients who received treatment. In the dental department, systematic orthodontic treatment for the correction of irregularities of children's teeth has been instituted. The number of students in attendance at th hospital was 319 in the winter session and 293 in the summer session. The income for the year under notice was £54,000, and the expenditure £55,000. The workpeople's contributions amounted to £19,000, an increase of over £1500 as compared with the previous year. The sum of £5100 was added to the capital account. The cost per bed was £135. During the year an extensive scheme of enlargement of the hospital has been undertaken to meet the ever-growing pressure upon its resources. Since the hospital was opened in the year 1903 the population of Belfast has increased by about 150,000, and the waiting list at the hospital never falls below 150, and sometimes exceeds 200. The building operations are now far advanced, and will afford 80 new beds, a new block for nurses, extensive additions to the extern department, and a new mortuary. New gynæcological and ophthalmic operating theatres, a common room for students, additional accommodation for the X ray department and the dental department are included in the plans. The total cost of the extensions will be about £80,000. An interesting feature of the year was the provision of the Princess Mary Cot, the funds for which were derived from the sum of money left over from the subscriptions raised by the women of Ulster to present Her Royal Highness with a wedding present. The cot was handed over to the hospital by the Duchess of Abercorn on Jan. 23rd, by whose instrumentality the sum of £250 for naming the cot was obtained. A signed photograph of Princess Mary overhangs the cot. The board records with much regret the decease of Sir John Walton Browne, D.L., one of its consulting surgeons. Professor T. Sinclair, C.B., F.R.C.S., has been appointed on the consulting staff, and has been succeeded on the visiting staff by Mr. S. T. Irwin. Mr. H. P. Malcolm has been appointed one of the assistant surgeons.

West Kent Hospital.—The annual meeting of this hospital was held recently at Maidstone. The report of the committee of management showed an increase in the number of patients in the various departments during 1923, but the present accommodation was not sufficient to meet the requirements of the neighbourhood and there was still a long waiting list of patients. The ordinary income had increased during the year by £1727, but it was still far short of the amount needed annually, and the year ended with an adverse balance of £1225. The committee expressed their special thanks to the members of the Pay Day Fund for their continued support, as the result of which £3437 had been raised. Dr. W. Shaw, who had been hon. physician to the hospital since 1904, having resigned his office, was appointed honorary consulting physician, and Dr. G. L. Atwater was elected hon. assistant physician.

Erratum.—In The Lancet of April 5th, p. 730, in announcing a meeting of the Royal Sanitary Institute, the second portion of the paragraph referred to a Congress at Bordeaux which is not that of the Royal Sanitary Institute, but of the Royal Institute of Public Health. Otherwise the information holds good.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, April 14th.

WAR: at 4.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.
Paper:
Lieut. Colonel J. A. Anderson, R.A.M.C.: The Recent Trend of Military Hygiene.
The paper will be followed by a discussion.

Tuesday, April 15th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for election to the Fellowship.

Wednesday, April 16th.

HISTORY OF MEDICINE: at 5 P.M.
Paper:
Dr. Louis W. Sambon: Preventive Medicine among the Ancients (illustrated by slides, drawings, and ancient objects).

Easter Closing.

The Society's House and Library will be closed from Thursday, April 17th, to Tuesday, April 22nd, both days inclusive.

LONDON DERMATOLOGICAL SOCIETY.
Wednesday, April 16th.—4.30 P.M., A Clinical Meeting will be held at St. John's Hospital, when cases will be shown. After the meeting the Fellows' Dinner will be held at the Criterion Restaurant (price 5*s*.).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, April 14th.—10 A.M., Surgical Registrar: Surgical Pathology. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Bishop Harman: Eye Department.

TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Department. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients.

THURSDAY.—11 A.M., Mr. Simson: Gynæcological Demonstration. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Simmonds: Surgical Out-patients.

FRIDAY.—10.30 A.M., Dr. Scott Pinchin: Medical Wards. 12 noon, Mr. Endean: Venereal Diseases. 2 P.M., Dr. Burrell: Medical Out-patients.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily 10 A.M. to 6 P.M., Saturdays, 10 A.M., to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital.

(At 4.30 P.M.)

MONDAY, April 14th.—Dr. A. J. Whiting: Extra Systole.

TUESDAY.—Dr. J. Metcalfe: The Treatment of Skin Diseases by X Rays.

WEDNESDAY.—Mr. T. H. C. Benians: The Pathology of Blood Infections.

THURSDAY.—Mr. W. E. Tanner: Gall-stones.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

TUESDAY, April 15th.—4.15 P.M., Mr. P. R. Wrigley: Cervical Rib.

Appointments.

McDONALD, D. T., M.B., Ch.B. Edin., has been appointed Medical Officer of Health to the Belford Rural District Council.

M'GONIGLE, G. C. M., M.D. Durh., D.P.H., Medical Officer of Health for Stockton-on-Tees.

PRICE, H. P., L.R.C.P. Lond., M.R.C.S., Medical Officer to the Reading Post Office.

WHEATLEY, ELIZABETH, M.B., Ch.B. Glasg., an Assistant Medical Officer at the Belvedere Fever Hospital of Glasgow Corporation.

Certifying Surgeons under the Factory and Workshop Acts: **HALE**, R. E. V., M.B., B.Ch. Camb. (Harpenden): **MELDRUM**, W. J., M.B., Ch.B. Aberd. (Ibstock).

Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Royal Buckinghamshire Hospital.—Hon. Radiologist.

Bethlem Hospital, Lambeth-road, S.E.—Two Res. H.P.'s. Each £25 per quarter.

Birmingham City.—Asst. M.O. £750. Also M.O. for Maternity and Child Welfare Work. £600.

Birmingham Union Dudley-road Hospital.—Obstet. and Gynæcological Resident. £500.

Bradford City.—Asst. School M.O. £600.

Bradford Royal Infirmary.—H.S. £150.

British Guiana Diamond Fields.—Government M.O. £500.

Cardiff, University College of, South Wales and Mon.—Prof. of Pathology and Bacteriology. £1500.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. £125.

Croydon County Borough.—Dental S. £600.

Eastern Dispensary, Leman-street, E.—Dent. Surg.

East London Hospital for Children, &c., Shadwell, E.—H.P. £125. Also Afternoon Cas. O. £120.

East Sussex County Mental Hospital, Hellingly.—Pathologist. £500.

Ebbw Vale Education Committee.—Ophth. S. £7 7*s.* per session.

Elizabeth Garrett Anderson Hospital, 144, *Euston-road.*—Asst. Radiologist. £100.

Hemel Hempstead, West Herts Hospital.—Res. M.O. £200.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—2 Asst. P.'s.

Huddersfield Royal Infirmary.—Res. H.S.'s. £200.

Infants Hospital, Vincent-square, Westminster.—Clin. Asst.

Kensington, Fulham and Chelsea Hospital, Richmond-road, Earl's Court, S.W.—Sen. and Jun. R.M.O.'s. £100 and £75 respectively.

Liverpool Eye and Ear Infirmary.—Hon. Asst. Aural S.

London Temperance Hospital, Hampstead-road, N.W.—Med. Registrar. 40 guineas.

Manchester Education Committee.—Asst. School. M.O. £600.

Manchester Royal Infirmary.—Res. M.O. £200. Also Asst. M.O. £100.

Northampton General Hospital.—Hon. P.

Nottingham Children's Hospital.—Res. H.P. £150.

Rainhill, County Mental Hospital.—Asst. M.O. £300.

R.A.M.C. Territorial Army.—Young Med. Practitioners.

Royal Chest Hospital, City-road, E.C.—Clin. Assts.

Staffordshire General Infirmary, Stafford.—H.P. £150.

Union of South Africa Government Mental Hospital Service.—Asst. P.'s. £460.

West Ham Union, Whipps Cross Hospital, Whipps Cross road, Leytonstone, E.—Fifth Asst. M.O. £434.

West London Hospital, Hammersmith-road, W.—Hon. Med. Reg.

Willesden General Hospital, Harlesden-road, N.W.—H.S. £100.

Willesden Municipal Hospital for Infectious Diseases, Brentfield-road, Neasden, N.W.—R.M.O. £373 9*s.* 3*d.*

Willesden Urban District Council.—Asst. M.O. £696.

The Secretary of State for the Home Department gives notice of vacancies for Ophthalmic Specialist Medical Referees under the Workmen's Compensation Act, at Ayr, Kilmarnock, Lanark, Paisley, Greenock, Renfrew, Bute, Isle of Arran, Stirling, Falkirk, Dumbarton, and Clackmannan. Applications should reach the Private Secretary, Scottish Office, Whitehall, S.W., not later than April 30th.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointment: Glastonbury, Somerset.

Births, Marriages, and Deaths.

BIRTHS.

HOSKIN.—On April 6th, the wife of T. Jenner Hoskin, M.D., Wimpole-street, W., of a daughter.

HURTER.—On April 1st, at Grassendale, Liverpool, the wife of Herbert R. Hurter, M.D., of a daughter.

LEWIS.—On March 31st, at Gordon House, Braintree, the wife of Dr. T. Percy Lewis, of a son.

MARRIAGES.

HAYES—HUDSON.—On March 7th, at the Cathedral, Bombay, Captain Sydney Nuttall Hayes, F.R.C.S., I.M.S., to Sybil Maud, only daughter of Dr. and Mrs. Wasdale Hudson, Parade, Cowes, I.W.

HINE—ROBERTSON.—On April 3rd, at Dundee, Montague Hine, M.D., F.R.C.S., to Jennette, younger daughter of Mr. and Mrs. J. Masson Robertson, of Alva, Clackmannanshire.

WALLACE—GRANT.—On April 3rd, at St. John's Presbyterian Church, South Shields, J. Montague Wallace, M.A. Camb., M.R.C.S., L.R.C.P. Lond., to Gladys, eldest daughter of Mr. and Mrs. J. Grant, of South Shields.

DEATHS.

BRAMWELL.—On March 31st, at Kenton, Devon, John William Bramwell, M.D., aged 72.

DYER.—On April 3rd, after an operation, Thomas Birch Dyer, M.D., of Brundall, Norwich, formerly Medical Superintendent, M.A.B. Asylum, Darenth, Kent, aged 78.

HAIG.—On April 6th, at Inverness-terrace, London, W., Alexander Haig, M.A., M.D. Oxf., F.R.C.P.

MACKAY.—On March 31st, at a nursing home, Edinburgh, John Sutherland Mackay, M.D.

RICHARDSON.—On April 1st, at Boscombe, after a short illness, Thomas Arthur Richardson, M.R.C.S., L.S.A., aged 69.

WALTER.—On April 2nd, at Stoke-under-Ham, Somerset, Richard Hensleigh Walter, M.B., C.M., F.S.A., aged 62.

WILLIAMS.—On April 1st, John Prichard Williams, M.R.C.S., L.R.C.P. Lond., Captain, R.A.M.C., of The Hermitage, Potters Bar, aged 30.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

SMALL ADVERTISEMENT RATES.

Appointments (Public) Vacant	Four lines and under, 6*s*. Each additional line, 1*s*. 6*d*.
Asylums and Homes	
Hotels, Boarding Houses, and Baths	
Books and Publications	
Houses and Estates Wanted and for Sale.	
Schools, Medical and Preparatory ..	
Nursing Institutes	
Financial, Official, and other Announcements	
Tutors and Tutorships	
Trade and Miscellaneous	
Practices and Partnerships	
Situations Vacant and Wanted	

For complete scale of advertisement charges apply to the Manager.

Notes, Comments, and Abstracts.

A REPORT ON THE VOLUNTARY HOSPITALS SYSTEM.

The second report of the Somerset Voluntary Hospitals Committee [1] is noteworthy in that the voluntary hospital system and the attempts being made to preserve it are discussed on general lines, local conditions being used to illustrate the argument.

The record of the year for Somerset is regarded as the epitome of the hospital work and progress in the whole of Great Britain. The quality of the work done in the individual hospitals shows steady improvement. The increase in size, personnel, and equipment of several institutions is recorded, and it is noted that each year doctors and nurses do higher class work. The old tradition of service shows no sign whatever of weakening. The local hospitals have a very strong hold on the affections of the people.

Criticism of certain local conditions finds a place. The work of one of the special departments of the Royal United Hospital at Bath is said to overlap that of the Ear, Nose and Throat Hospital. Again, while the smaller hospitals were ordinarily only half full, and 150 beds or more were available daily for occupation, the Royal United, Bath, had throughout the year a long waiting list. In the Bath Infirmary there are 217 beds, of which 57 are ordinarily unoccupied. The distance which poor patients can afford to travel to obtain special treatment does not exceed about 20 miles, and access to specialists is practically withheld from about two-thirds of the county. Non-coördination means an uneven distribution of benefits, wasted potentialities, and an inefficient hospital service. The natural evolution towards a well-coördinated hospital system which the country is striving to work out, through its local hospitals and county and municipal institutions, is artificially hindered, in Somerset and throughout England, by the unwillingness of the cities to decentralise, and of the voluntary hospitals to coöperate with public bodies. In November, 1923, a conference of the representatives of all voluntary hospitals in Bristol, Somerset, and Wilts was held at Bristol, and it was resolved to constitute a joint hospitals committee for the three areas. This is the first step towards coördination. Many of the reports issued by hospitals are not complete. One was not issued until December. It is most desirable that the number of in-patients from each parish be disclosed, and how many are private patients. The committee ask that there should be a full medical report, such as will enable subscribers to ascertain the quality and extent of the work done.

The General Position Throughout the Country.

The report is, on the whole, pessimistic in tone. It is pointed out that the results of the energetic efforts made by hospitals, throughout the country, to redeem the financial position from the liabilities incurred during the period of the great war have been disappointing. It is against central general hospitals especially that deficits have piled up, and it is now apparent that they are due to something more than the temporary effects of the war. Most of these hospitals were founded during the eighteenth century, and for nearly 150 years did all the hospital work of the country. They were originally little more than hostels for the convenient treatment of the city paupers, and were maintained by quite a few wealthy men and women of the city; but they soon began to attract patients from the surrounding country. As manufacturers and merchants were, during the whole of the eighteenth and nineteenth centuries, becoming richer and richer, money was always forthcoming to meet capital requirements and the ever-increasing annual expenditure. Thus it became almost an article of faith with managing committees that extensions should keep pace with the demand, and that every effort should be made to increase this demand by conspicuously good work. By 1914, the teaching hospitals, and many other central general ones, had grown into enormous institutions, offering free treatment to all comers from everywhere, and to anyone who could not afford to pay the rapidly increasing cost of an operation in a private nursing home. Between 1914 and 1920 costs and salaries increased at an abnormal rate, but the margin of capital and income, available for charitable legacies and donations, did not expand in the same proportion; expansion was effectively checked by enhanced income-tax and estate duties, and the period of recurring annual deficits commenced.

The Traditional Assumptions of the Voluntary Hospital System.

The report contends that the English hospital system is based on certain traditional assumptions. It is assumed that the population is divided, by a sharp line of cleavage, into rich and poor, that those below the line are suitable beneficiaries of charity, able, perhaps, to pay something towards their maintenance when in hospital, but nothing for their medical and surgical treatment there, and those above the line are wealthy enough, and numerous enough, to support the hospitals, to pay the charges of nursing homes, and by high fees to remunerate the surgeons and physicians for all their hospital work. It is assumed, also, that the rich of the great cities can afford to provide hospitals, not only for their own poor but for an indefinite number of patients from outside, and further, that these outsiders spread the reputation of the members of the hospital staff and build up their private practices. And lastly, that there is no surgery, and no hospital worth the name, outside the boundaries of the great hospital centres.

The Present Position.

The committee express the belief that none of these assumptions are now justified by actual facts. The success of contributory schemes, and their enthusiastic acceptance, have revealed that a large proportion of hospital patients receive wages that should render them independent of charity, and that they desire to be independent. Whole classes of the "gentry" are kept by sentiment and tradition within the category of "rich," though barely able to meet the cost of living. The aggregate fees which those above the line are able to pay surgeons and physicians no longer constitute fair compensation for the services given to the population generally.

Within the last 30 years the greater part of England has been covered with a network of district and cottage hospitals, many of them admirably equipped, and staffed by visiting surgeons of acknowledged repute, or by men who have had special experience during the war, or by competent graduates who realise that the career of city consultants has become a hazardous speculation. These hospitals have arisen in response to reasonable and natural demands, by the people for treatment as near as possible to their own homes, and by the general practitioners for opportunity to do serious work. There can be no doubt that a large number of cases sent to central hospitals could be treated, at least adequately, in a local one. In the district and cottage hospitals many of the old traditions have been abandoned; outside patients are not admitted, and there is no arbitrary division of the population. It is being discovered that any average area can provide sufficiently good general hospital service for all classes, at a cost which no one finds ruinous, and that the necessary money can be raised by methods which all approve. The classes who provide the paying clientèle to consultants are finding that a district hospital offers a more complete equipment and better service than a city nursing home—at half the cost, and they are refusing to be shepherded into the cities at the tail of the poorer patients.

The Results of the Attempt to Preserve the Old Traditions.

That the very foundations of the voluntary hospital system have crumbled away has been recognised by the management of the central general hospitals, to the extent of soliciting payments towards the cost of maintenance, and regular contributions, from the patient class—but no further. The attempt to preserve the old traditions is reducing nearly all central hospitals to financial straits, and compelling them to resort to sensational, costly, and even undesirable devices for raising money; it is rendering the position of the consultants alarmingly insecure, and making it necessary for the junior staffs to ask for a living wage. It is causing grave discontent among the middle classes, who derive no benefit from the hospitals, and are called on to pay fees artificially enhanced by the antiquated rule which restricts their collection to a small percentage of the population.

To appreciate the general position it is necessary to understand how England is geographically divided for hospital purposes. The patients' register of any district or cottage hospital will disclose the parishes and villages from which its patients are drawn. A district hospital has ordinarily over 30 beds but less than 100; a cottage hospital 30 beds or under. Round any city there is ordinarily a clear space uncovered by any district or cottage hospital; the city itself and this clear space constitute the "city hospital area." Every central general hospital (which ordinarily has 100 beds or more) serves not only the city hospital area but admits patients regularly from an ascertainable number of cottage areas; the city hospital area, and these cottage areas constitute a "central hospital area." A central general hospital, to which a medical school is attached, admits patients from a large number of district and cottage areas, and overlaps less important central hospital areas; the whole region served might be termed a "teaching hospital area." It must be borne in mind that ordinarily from one-third to one-half of the in-patients in a provincial central general hospital come from outside the city hospital area, and that in teaching hospitals the proportion is very much larger.

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[1] Bath: The Herald Press, North Gate. Price 6*d.*

The population of every city, district, and cottage hospital area readily admits its obligation to support its local hospital, so far as it benefits local residents. But appeals on behalf of any central hospital have little reaction as soon as the limits of a district or cottage hospital area are crossed, and, consequently, appeals within the city have to be frequent and vigorously importunate. If the experience of Somerset may be taken as having general application, there would be no difficulty in mapping out the whole country into these natural areas, and there are probably few exceptions to the general rule that every area is competent and willing to make hospital provision for its own population, provided that it be free to get the service it needs, and to pay for it in the way it finds most suitable.

From various tables set out in the report it is claimed that the following inferences can be fairly drawn:—

District and cottage hospital areas are not paying their fair share of the cost of the service from which they benefit.

Even the richest cities can no longer find the money for giving free, or very cheap, treatment to as many outside patients as they are attempting to.

It costs less to treat a patient in a district or cottage hospital than in a central general one, less in an ordinary general hospital than in a teaching one, less in a provincial teaching hospital than in a London one.

The difficulty which a central general hospital experiences in collecting from outside areas contributions proportionate to the cost of the services rendered to them varies with the distance of such areas. The wider the area served, the larger the hospital. Hence the probability that any central general hospital in the provinces will have a deficit increases with its size.

The minimum essential staff and equipment of a special hospital are greater than those of a general hospital, but the actual cost of treating each patient seems less. Hence, the cost per bed in a small special hospital is less, and that in a large special hospital is more, than that in a general hospital of corresponding size.

In London, and other cities containing several hospitals, there is in any year an indefinite, but not unlimited, amount which is forthcoming from the public for hospitals generally. For this the several hospitals compete. An important factor in determining the share secured by a particular hospital is the personality of the man who conducts its begging campaign. Though the standard of equipment and quality of service are ordinarily higher in the larger hospitals, the price of land, building costs, rents and wages are higher in crowded cities than in provincial towns or villages, and it is obvious that centralisation, so far as it draws to the city general hospitals cases that can be dealt with locally, involves heavy unnecessary expenditure. In the case of special hospitals centralisation leads to economy, though severely limiting the population which can obtain the benefits of special treatment. The smaller special hospitals are popular and well supported.

The Future.

It is contended in this report that if the English voluntary hospital system is ever to be placed on a permanently stable financial basis, and to provide for all classes a satisfactory and economical hospital service, if the consultants system is to be retained and a fair income assured to surgeons and physicians, certain essential conditions must be fulfilled. The cities must be relieved of some part of the excessive burden which they have shouldered, and be set free to give to the members of their own patient class something more than they now have—the precarious chance of admission if they are in immediate need of operation, or constitute "suitable material" for medical students. The cost of maintaining central general hospitals must be spread over the whole of their areas, and for this a contributory scheme of universal application should be devised, with its organisation based on natural hospital areas, which gives to every hospital such share as it actually earns, and to every contributor good value for his money, not seeking to exploit by purely sentimental appeal. Suitable accommodation must be provided for the middle classes, and they should be given opportunity to insure against serious illness and the normal cost of surgical and special treatment. The claims of the junior staffs to reasonable payment must be admitted, and be taken into consideration when estimating the normal cost of a patient for purposes of the contributory scheme. District and cottage hospitals must be encouraged to do the fullest work of which they are capable. Facilities for special treatment must be extended to country populations remote from the great centres, and the grievance of the country "panel doctor," that he gets no remuneration for hospital cases, be remedied. The voluntary hospitals must work with county and municipal institutions. The cities must abandon their position of isolation, and actively recognise that between them and the country areas exist close ties of mutual obligation. There must be real coördination.

THE FOUNDING OF THE U.S.A. WAR HOSPITALS.

A VALUABLE work [1] has appeared in handsome guise, telling how hospitals for the new armies of the United States were found, built, administered, and afterwards closed. An abstract should be published, for these essays by many hands are so detailed that few will have time to find in them the special points they may be seeking; hardly will even military medical experts be able to assimilate all that is set out. In 1917 there were 9530 beds in military hospitals of all kinds in the United States. At the Armistice there were 120,916 equipped and 27,000 nearly ready, a wonderful tribute to the sound organisation and power of expansion of the U.S. Army Medical Department. The type of hospital favoured was the pavilion, first (p. 16) seen in the R.N. Hospital at Plymouth (1750), and reproduced, after the experiences of the Crimean War, in the Herbert Hospital at Woolwich.

When the United States entered the war, hospitals for the Expeditionary Force were planned to take 2 per cent. medical and 5 per cent. surgical casualties, of whom four out of five were expected to be walking cases. The number of beds in wards varied from 14 to 100; smaller wards were provided for raw troops unaccustomed to live together, larger for trained soldiers, become relatively immune to infectious diseases. Each patient had 800 cub. ft. of space in a ward 11½ ft. high, and some 25 ft. wide, with 70 to 85 sq. ft. of floor area to each bed, and 3 ft. or 3½ ft. between beds. The windows were between alternate beds (two beds between each pair of windows), so each bed had half a window and its own share of light and fresh air; the window surface was one-tenth of the floor area, and ventilation was by sliding sashes and louvred (baffled later to keep out snow) ridge ventilators. Artificial ventilation of a six-story hospital is mentioned on p. 442, but most hospitals were single-storied. The wards were at right angles to the connecting corridors, "annexes" at the nearer, a "solarium" or sun-bath at the further end. Round the ward ran a verandah on to which beds could be wheeled. In the annexe there was, next the ward, a bed-pan room one side, on the other, at first, the nurse's room; later she was given her desk in the ward itself for her papers. There was a serving kitchen (very little cooking was done here); a slop sink and closet for brooms, cleaning pails, &c.; an office for the medical officer; a treatment room; several "quiet" rooms for serious cases (10 per cent.); for every 15 or 20 patients a w.c. seat (no partitions); at first washing-basins in the same proportions (later the basins were withdrawn, and taps remained over a trough); shower baths were 1 for 25, and, like the ablution taps, were supplied with tepid water from a tank with an automatic heat regulator, but one fixed bath with hot and cold taps was also fitted; one urinal stance for every 25 beds. There was always a hospital laboratory, but a clinical laboratory was provided for each 200 beds.

The main hospital kitchen probably served not only the patients but the hospital staff as well. It was planned so that orderlies had not to enter it, thus the cooks were not obstructed. On one side of the kitchen was the hospital store, on the other a corridor, with the main dining-room just across it, thus the food would be served as hot as possible. In the kitchen food was put into large containers, 15 in. by 12 in. by 11 in. deep, and four held dinner for 160 men; in the first soup, in the second potatoes, meat and gravy in the partitioned third, with a second vegetable (two-thirds), and the pudding (one-third of the space) in the fourth. The containers fitted on to the food wagons, and carried meals to the dining-room or to the wards. When staffs dwindled, food was distributed in the dining-room on a "cafeteria" system (for which the editors have only praise), introduced into the restaurants of the United States by Italians. Each patron on arrival takes his place in a queue, and as it passes forward he lifts a tray from a shelf, on it puts what crockery he needs, and at the counter the servers give him his helpings of food, all which he takes away with him to his table. Thus he is his own waiter, and staff is economised. After his meal he returns his used mess-gear to another counter near the kitchen, where are the dish-washing machines. It is found that 20 men can serve themselves from one counter (30 to 35 ft.) per minute, 10 to 15 minutes suffice for each man's meal, thus 300 men are served per hour per counter. Detailed plans are given with exact measurements, even of the food-wagons, the fish-boxes, and the lavatories of the cooks (who are all free from typhoid).

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[1] The Medical Department of the U.S. Army in the World War. Vol. V.: Military Hospitals in the United States. Washington: Government Printing Office. Pp. 857. $2.25 (9s.).

There are full accounts of the auxiliary services of the hospitals, the canteens, hospital magazines, housing of the staff, recreation provision for patients and staff, training courses for medical officers (even telling how the less valuable were eliminated). The influenza epidemic of 1918 severely tested the organisation of hospital and the zeal of their staffs. Camp Grant Hospital had 642 patients on Sept. 21st, 1918, and had suddenly to receive 194 fresh cases of influenza that day. By that day week there were 3346 patients in hospital, and 798 were admitted. Deaths had so far been few, but they now increased, and new cases fell off, so on Oct. 6th there were only 370 admissions, with 430 discharges, but there were 99 deaths. The story of this outbreak (pp. 241 seq.) will well repay perusal. A laundry of its own usually saved money to a hospital, especially if it did gauze reclamation. Gauze, taken off a patient, was put for 12 hours in 1 per cent. cresol solution, boiled, washed in a machine, bleached, and dried. It was then put up in suitable parcels, sterilised, and used again without any disadvantage.[2] Hospital laundries always pressed patients' uniforms. A small motor truck with trailer, both quite small, were found most useful for taking stores issued round the hospital that was lucky enough to have "found" them. Stores and equipment of wards are, technically, "property," and it was found necessary to have a "property officer" in each section to watch over it: the chief officer of the section had no time for even that important work, and it fell to a specially designated junior officer. Fire protection was most carefully watched in these so often wooden hospitals; thus, kitchens were built with expanded-metal, instead of wooden, laths.

The index and illustrations of this book are, like the paper and printing, very good. The regimental inspection room (p. 108) plans are just what a medical officer wants and hopes for. Alas, that it should be so often in vain.

HANDBOOKS ON BRITISH AND FOREIGN SPAS.

THE British Spa Federation, comprising the spas of Bath, Buxton, Cheltenham, Droitwich, Harrogate, Leamington, Llandrindod Wells, Strathpeffer, Woodhall, and New Zealand, have issued their new Federation Handbook,[3] which is intended for the use of members of the medical and allied professions. A copy of it is being sent to every medical man in the country. The outlines of medical hydrology and spa treatment as practised in this country are dealt with clearly and concisely. The general practitioner will find it of much help in advising his patients as to the choice of a spa. The book is illustrated, and contains an introduction by Dr. Fortescue Fox.

The object of another small guide[4] on a cognate subject which has reached us is to aid in the choice of a spa or health resort for patients suffering from illness as a result of residence in the French Colonies. It deals not only with the well-known spas in France, but also with those in the French Colonies. Information, from trustworthy authorities, in a simple and handy form is laid before the practitioner. The book is illustrated and contains a preface by Dr. Paul Carnot, Professor of Therapeutics, Paris.

RESEARCH ON CONTRACEPTIVES.

TWO years ago a special medical research committee was constituted by the Society for Constructive Birth Control and Racial Progress, with the allotted task to consider critically the physiological and psychological reactions of various methods of birth control. The members of this committee are as follows: Sir James Barr, Sir William Bayliss, Mr. Harold Chapple, F.R.C.S., Dr. Jane Hawthorne, Dr. George Jones, Barrister-at-law, Dr. Maude Kerslake, Sir W. Arbuthnot Lane, Sir John MacAlister, Sir Archdall Reid, Dr. Christopher Rolleston, Dr. D. Sommerville, Mrs. Marie Stopes, D.Sc., Dr. H. M. Telling, Dr. Mather Thomson, and Mr. E. B. Turner, F.R.C.S. The proceedings and minutes of this committee are confidential, and none of its deliberations is published, except about points which are specially passed for publication. A number of new or supposedly new methods have been brought before it from various quarters, and a statement just issued states that due consideration confirms the view that no one method is applicable, but that several of the simple and well-known methods which have had a long trial still are the best to meet ordinary requirements. At the last committee meeting the following resolution was passed for publication: "The Medical Research Committee of the Society for Constructive Birth Control and Racial Progress wishes to place on record its joint and several opinion that the methods now used at the Mothers Clinic are the best known at the present time." Communications from anyone desiring to bring matters for discussion before the research committee, or to present scientific results for its consideration, should be addressed to the hon. secretary, C.B.C., 7, John-street, Adelphi, London, W.C. 2.

Corrigendum.—Mr. J. B. S. Haldane writes from the Biochemical Laboratory, Cambridge, to correct an equation which appeared in his article on Human Tissue Alkalinity (THE LANCET, March 15th, p. 537). This should run:—

$$2\,NH_4Cl + 2\,NaHCO_3 = 2\,NaCl + CON_2H_4 + CO_2 + 3\,H_2O.$$

THE presidential address on Environment and Health delivered by Mr. Charles P. Childe at the ninety-first annual meeting of the British Medical Association, held at Portsmouth in July, 1923, has been reprinted as Fabian Tract No. 208, and may be obtained at the Fabian Bookshop, 25, Tothill-street, Westminster, S.W. 1, price 2*d*.

CATALOGUE NO. 234 (1924) of scientific books issued by W. Heffer and Sons, Limited (4, Petty Cury, Cambridge), contains special sections dealing with (8) Physiology, Anatomy, and Medicine; and (9) Psychology and Psycho-Analysis. In the former is included an important collection of journals on ophthalmology and otology, and many other series or partial series of archives, journals, and centralblatts are offered for sale.

Messrs. Burroughs, Wellcome and Co. inform us that the medical supplies carried by Squadron-Leader Maclaren, who is in command of the British machine engaged in the round-the-world flight, consist of two light aluminium cases containing emergency bandages, dressings, sundry surgical appliances, as well as "tabloid" medicines in featherweight containers representing 364 separate doses. The complete medical equipment weighs only 24 ounces. The American expedition, organised by the U.S.A. Army Air Service, which started eight days before the British, has each of its four airplanes similarly equipped with an aluminium case containing "tabloid" medicaments and dressings.

The Services.

ROYAL ARMY MEDICAL CORPS.

Capt. F. H. Woods retires, receiving a gratuity.

ARMY DENTAL CORPS.

Capt. E. Smith retires, receiving a gratuity.

TERRITORIAL ARMY.

Lt.-Col. M. B. Ray, from R.A.M.C., T.A., to be Col. and Asst. Director of Medical Services 47th (2nd Lond.) Div. T.A.

Capt. E. G. Howell resigns his commn. and retains the rank of Capt.

E. A. Wilson to be Lt.

Capt. J. H. P. Fraser, from Gen. List, to be Maj. and to command 7th (Southern) Sanitary Coy.

ROYAL AIR FORCE.

Flight Lt. E. G. S. Hall resigns his short service commission.

Flight Lt. (Hon. Squadron Leader) A. E. F. F. Huntsman relinquishes his temporary commission on account of ill-health, and is granted the rank of Squadron Leader.

Flight Lieut. V. R. Smith is granted a permanent commission in the rank stated.

Flight Lieut. (Hon. Squadron Leader) G. D. Kerr relinquishes his temporary commission on ceasing to be employed and is permitted to retain the rank of Flight Lieut.

Flying Officer J. M. Rourke relinquishes his short service commission on account of ill-health.

INDIAN MEDICAL SERVICE.

Lt.-Col. T. H. Symons to be Maj.-Gen.

Capts. P. J. Veale, Heerajee Jehangir Manockjee Cursetjee, P. F. Gow, J. S. S. Martin, J. W. Jones, and J. H. Hislop to be Majs.

Lt. P. A. C. Davenport to be Capt.

Temp. Capt. P. A. C. Davenport to be Lt. and to retain his temp. rank of Capt.

J. F. Shepherd to be Lt.

The King has approved the grant of a temporary commission to Khushi Ram as Lt.

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[2] At Camp Grant the expenditure on new gauze was by "gauze-reclamation" reduced from 700 yards per day to 10 yards per month!

[3] The Spas of Britain. The Official Handbook of the British Spa Federation. Compiled from the reports of the local Medical Committees. Bath: Pitman Press. 1924. Pp. 170.

[4] Le Bréviare Thermal des Coloniaux. By J. J. Matignon, Consultant Physician, Châtelguyon, and S. Abbotucci, Medical Officer (1st Class), Colonial Troops. Paris: A. Maloine et Fils. 1923. Pp. 152. Fr.8.

Lumleian Lectures

ON THE CLINICAL FEATURES OF
FOREIGN BODIES IN THE BRONCHI.

Delivered before the Royal College of Physicians of London

By THOMAS McCRAE, M.D., F.R.C.P. Lond.,
PROFESSOR OF MEDICINE, THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

(*With Illustrative Plate.*)

LECTURE II.

Delivered on April 8th, 1924.

Interpretation of Physical Signs.

The interpretation of the physical signs due to a foreign body in a bronchus will not prove easy for one who solves the problems of physical diagnosis by rule of thumb, who has one formula of signs by which he diagnoses pneumonia and another by which he diagnoses pleurisy. In some cases the findings are easy to interpret, but often there are puzzling signs which require care for proper valuation. This is especially true in children in whom there are more variations, especially in the signs obtained on percussion, than in adults. Certain points may be mentioned. In children, especially if the symptoms are acute, it is wise to go to work slowly and utilise inspection as fully as possible. This gives such important information that it should always be thorough. A child held in the nurse's arms will often become quiet and permit a satisfactory examination of the back. Percussion is not always satisfactory if done while a child is crying, as it then often gives confusing results. Auscultation, on the contrary, may give valuable results if done while the child is crying. If the signs are puzzling, repeated examinations should be made. The remarkable variation, even from hour to hour, especially in the signs obtained by percussion and auscultation, deserves special emphasis. In the study of the signs it is important to consider what may occur in the air passages and what results may follow the presence of the foreign body. A realisation of these points aids greatly in the interpretation of the signs. They may be noted as follows :—

1. *The Foreign Body Itself.*—A safety-pin gives but few changes and may not obstruct the passage of air sufficiently to cause any local signs in the lungs supplied by the bronchus in which it lies. A small metallic body may set up slight local irritation but interfere little with the passage of air. A round body such as a seed or nut may completely obstruct a bronchus at once and shut off the portion of lung supplied. In other cases the obstruction may not be complete at first, but soon becomes so by the resulting swelling of the mucous membrane. The blocking may be intermittent and give changing signs.

2. *Irritation and Inflammation.*—These vary greatly, dependent to a large extent on the character of the foreign body. A peanut sets up an intense inflammatory process which causes signs of itself and by swelling of the mucous membrane may completely close the bronchus. The inflammation may extend to other bronchi than the one affected. In cases of some duration the formation of granulations may extend for some distance.

3. *The Presence of Secretions.*—These may cause signs in the lung supplied by the affected bronchus. If air and secretions are both present many signs—especially on auscultation—are produced. If secretions accumulate and the air-supply is cut off, the air present is absorbed and the signs of a collapsed or "waterlogged" lung result. Secretions may pass into other portions of the affected lung or to the bronchi of the opposite side and cause signs there.

4. *Shifting of the Foreign Body.*—This is not infrequent and may be responsible for signs in two lobes or in both lungs. The picture at first is confusing and the greatest safeguard is in studying the signs carefully for a short period. The area first affected usually clears rapidly after the foreign body has shifted.

Anatomically it may aid to remember that there are several classes of cases : (1) Those in which a bronchus is completely plugged by the foreign body or by it plus swelling of the mucous membrane. In this case the signs should be easy of interpretation as the supplied lung is without air, collapses to a greater or less extent, and usually soon contains considerable fluid and secretion. (2) Those in which the bronchus is partially occluded and in which air and secretions are both present—perhaps in varying amounts at different times. (3) Those in which the foreign body acts as a ball-valve and in which the amount of air in the affected lung is greater than normal. The condition should be readily recognised by careful examination, especially by inspection.

Methods of Examination.

Inspection.—This cannot be too thorough and in restless children time and patience may be necessary. Inspection of the back should not be forgotten. It may be stated as a rule—from which it is doubtful if there are any exceptions—that there is always decreased expansion on the affected side. If the foreign body has shifted from one side to the other or portions of a foreign body (such as a nut) are present on both sides, then the change in expansion will be bilateral. The affected side may show some decrease in size, most evident if a lower lobe is affected, the bronchus is completely occluded, and collapse has occurred. If the foreign body has a ball-valve action the affected side is often larger but shows decreased expansion. The evidence of the extent of movement of the diaphragm should be carefully studied. It is less on the affected side, more especially if a lower lobe is involved. Evidence of displacement of the heart may be evident.

In some cases the only observable change is *decreased expansion.* This is seen particularly when the foreign body is metallic, such as a pin. It occurs when there is no evidence of obstruction to the passage of air or of changes in the bronchi or lung beyond the foreign body. The explanation of this phenomenon is difficult to give, but it probably represents a sensory reflex. The foreign body irritates a sensory ending in the bronchial mucosa which may result in a reflex contraction of the bronchial muscles. W. S. Miller[1] has shown that the action of the bronchial muscles in expiration is active rather than passive. The work of O. Larsell shows a mechanism which allows of expansion and contraction of the bronchi longitudinally during inspiration and expiration. Interference with the normal action of the bronchial musculature may be thus explained.

Palpation.—The transmission of the voice vibrations will vary with the degree to which the bronchus is occluded. If this is complete the vibrations are absent or present to a very slight extent. Accurate observation in children is often difficult. The voice may not be strong enough to set up vibrations of any force, in which case advantage should be taken of crying. In some cases in which there is "drowned lung" there may be some transmission of the vibrations, but this is usually slight. With a partially plugged bronchus the vibrations vary from time to time, but are likely to be somewhat decreased.

Percussion.—If the possible anatomical changes are kept in mind there should not be much difficulty in interpreting the findings. As many of the cases occur in children, it should be remembered that in them tympany is a common finding with various pathological conditions. If the foreign body allows air to enter, but not to leave an area of lung the note will be hyper-resonant or tympanitic. On comparison with the opposite side, the normal lung may seem to yield an impaired note. Careful inspection and percussing first on the normal side should prevent this error. If the bronchus is completely plugged, as soon as the contained air is absorbed, the note shows dullness to flatness. Shortly after the bronchus is occluded, there may be collapse of the lung giving a quality of tympany associated with dullness. Later, as secretions accumulate, the note becomes flat. In case of partial obstruction or obstruction which varies in degree from time to time, there will be varying combinations of dullness, normal resonance, and tympany. The reason for the alterations is evident, as the quantity of contained air, the amount of retained secretion, and the extent of collapse of the lung vary from time to time. In case of doubt in such cases a study of the signs at intervals usually clears up any difficulty. Marked changes are sometimes seen in a few hours if there is considerable secretion which accumulates for a time and then escapes, allowing some air to enter. The signs may be somewhat the same as may be found in cases of abscess, which is often present in cases of some duration.

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[1] Amer. Rev. Tuberculosis, 1921, v., 689.

There are some findings which deserve mention. In children in whom the lower lobe bronchus is completely blocked there may be flatness in the axilla and adjoining back to about the scapular line, but between the latter and the spine there is dullness with a varying degree of tympany. This may occur in cases of long duration, so that it cannot always be due to some air being retained. Is it possible that in these cases there is some shifting over of the opposite lung and that the note is transmitted from it? In these cases distant blowing breathing is sometimes heard over the same area. Another change is apparently due to collapse of the lower right lobe. If this occurs suddenly, with marked displacement of the heart to the right, the middle lobe is shifted to the right and resonance is found over an area usually occupied by the lower lobe.

The sense of *resistance* does not aid greatly except in cases of flatness over a lower lobe when a diagnosis of effusion—serous or purulent—might be made. The resistance over a "drowned lung," or one containing much secretion, is not as marked as over pleural fluid. In an occasional case in which there is a great accumulation of fluid and secretion below a body which completely plugs the bronchus, the sense of resistance may be marked and even suggest pleural effusion. In such a case it is the resistance of fluid in the lung which we are feeling. Extreme difficulty, however, is rare.

Auscultation.—The study of the breath sounds is often very helpful and sometimes most confusing. If one lung is shut off, the respiration will be more marked on the other side and the breath sounds over the sound lung exaggerated and harsher, but not altered in their essential quality. Over the lung supplied by an occluded bronchus the breath sounds are absent or very much decreased. In such cases it is not uncommon in children to hear very distant breath sounds which may have a slight blowing quality, but they do not have the character of pneumonic breath sounds. This is neither invariable in cases with the same variety of foreign body nor constant in the same patient. If the bronchus is partially plugged the breath sounds are harsh and may have a blowing quality with prolonged expiration. The loudness and roughness are dependent on the extent of the narrowing due to the foreign body and to the presence of secretions. In these partially occluded cases the breath sounds often vary from hour to hour. The voice sounds are fairly parallel to the breath sounds.

Râles.—Their number and character depend on the amount of secretion and the changes in the mucous membrane, and hence there are many possibilities for variation. The secretions may, and often do, enter into other bronchi than the one involved, and not infrequently the resulting râles are louder and more numerous over other portions of the lungs than the one supplied by the affected bronchus. This is especially marked in the peanut cases in which there is a general tracheo-bronchitis. The râles are loud and coarse, and occur with respiration and expiration. Râles are often heard over the upper lobe of the lung when the foreign body is in the lower lobe bronchus. They vary in character, but are usually medium or coarse. If there is partial occlusion with some air and secretion below the foreign body, many râles are usually heard, some of which may be bubbling. Over the area supplied by a completely plugged bronchus there are no râles as a rule. In some cases râles are particularly loud over the area where the foreign body is situated.

In a few cases of a small metallic foreign body peculiar râles, very fine in character, have been heard over a limited area corresponding to the situation of the foreign body. These occur usually at the end of inspiration and suggest the crackling of very fine soft tissue paper. They are not loud, but have a characteristic fine quality.

With a foreign body in the trachea there may be very loud râles of many kinds heard throughout both sides of the chest. In narrowing of the larynx from œdema there may be similar findings with rough breath sounds, the cause of which is evident.

SIGNS PRODUCED BY VARIOUS KINDS OF FOREIGN BODY.

Pins.

The aspiration of pins, either the ordinary or safety variety, is comparatively common and will continue as long as the mouth is used as a holder for them. With a pin held in the lips, the person may be startled, cough, or begin to laugh, any of which may result in the pin being aspirated.

Safety-pin in Bronchus.—A woman, aged 32 years, two weeks previously coughed while holding a safety-pin in the mouth and aspirated it. She had a severe attack of coughing immediately and after this she had a tickling sensation and an occasional hacking cough. On examination she was comfortable without dyspnœa or cough. The only physical sign was diminished expansion on the left side. There was no change on percussion and the breath sounds were everywhere clear and the same on the two sides. The X ray study showed the pin (Fig. 1) in the left main bronchus without any evidence of change in the lung beyond the pin. Three hours after the removal of the pin by Dr. Jackson the expansion was found to be equal on the two sides.

A child, aged 10 months, was brought with the history that a week before the parents heard her choking and found her with severe dyspnœa. A small safety-pin which had been fastened in her clothing was missing. An X ray examination showed the safety-pin in a bronchus and two unsuccessful attempts at removal were made elsewhere. On examination the child seemed perfectly well and there was no dyspnœa or cyanosis. On inspection there was markedly decreased expansion of the right side, most marked below. Percussion was normal throughout and no difference could be found. The breath sounds were perhaps slightly rougher in the lower right axilla, but the difference was very slight. Not a single râle was heard. On bronchoscopy there was considerable subglottic swelling (probably due to the previous bronchoscopies) and the pin was found deep in the right lower lobe bronchus.

From the physical signs alone it is not possible in the majority of cases to make a diagnosis of the presence of an ordinary pin in a bronchus or to decide as to its location. With a definite history of aspiration only the affected side can be determined. Without a history of aspiration no suspicion may be aroused, although decreased expansion without any other sign should suggest the possibility. An X ray study gives the diagnosis without difficulty. The time required for the return of normal expansion after the removal of a pin is variable. In one patient the expansion was equal on the two sides within three hours after removal. In other cases a week has elapsed before normal movement was restored. In general it seems that the lower in the bronchus the pin travels, the longer the time required for restoration of the normal expansion.

If the pin has a relatively large head the signs are more marked and more accurate localisation is possible, as is illustrated in the next two cases. In the second one a remarkable shifting of a long pin is shown.

Hat-pin in Left Bronchus.—A child, aged 10 years, was admitted on Feb. 11th, 1922, complaining of slight cough and dyspnœa. On Dec. 30th, 1921, the child took a pin from her clothing and put it in her mouth. Another child slapped her on the back and in throwing her head backward she aspirated the pin. She states that it went down without any disturbance. An attempt at removal was made elsewhere the same night and two subsequent ones later: all were unsuccessful. The symptoms, even with the repeated bronchoscopies, have been very slight. The patient showed no distress, dyspnœa, or wheeze. Expansion was diminished in the lower left chest. When first examined there was slight relative dullness in the lower left back, which came to about the mid-axillary line. After vigorous breathing this was distinctly less marked. On auscultation very little change was made out, but when the dullness was present at the lower left back the breath sounds were quieter over this area. In the fifth and sixth interspaces, about an inch outside the left nipple line, a moderate number of very fine crackling râles were heard, and over the area of dullness medium crackling râles were heard, mostly with inspiration. The signs suggested that the pin was low down in one of the branches of the lower left lobe bronchus and had a larger head than the ordinary pin. The pin was found in the posterior vertical branch of a posterior subdivision of the left lower lobe. Shortly after removal there was still diminished expansion in the lower left and a few râles were heard. Two days later the difference in expansion was very slight. The X ray study showed practically no change in the lung tissue.

Shawl-pin in Bronchus.—A girl, aged 18 years, came with the history that two days before she had been picking her teeth with a shawl-pin, about two inches long, when it suddenly "went down." She states that it went down easily and she had no coughing or gagging. She is positive that she has not had any symptoms whatever. On examination she had no distress or dyspnœa. There was much less expansion on the right side with slight dullness on percussion over the middle and lower lobes and the breath sounds less well heard over the same area. Not a râle was heard. In the next two days the breath sounds over the lower lobe were less marked. The X ray study showed the pin in the *right* main bronchus, the point being just at the bifurcation of the trachea and the head below the upper lobe bronchus. Before the bronchoscopy was done a fluoroscopic examination was made and the pin was seen to have shifted to the *left* main bronchus. At bronchoscopy (Jackson) the right main bronchus showed the mucosa reddened but without any appreciable swelling. The pin was removed from the left main bronchus. Three days later the expansion was equal, there was slight dullness over the lower right lobe, but the breath sounds were practically normal.

Portions of wire are not common and the following case is of interest:—

Wire in Bronchus.—A child, aged 11 years, came complaining of cough, fever, and dyspnœa on exertion. Two years before she "choked" on a piece of wire shaped like a fish-hook and soon after was in bed for two weeks with a "cold." Slight dyspnœa followed and has existed to the present. A few weeks before admission she ran in a race and became very dyspnœic. On examination the child was well developed and did not have any clubbing of the fingers. There was no wheezing respiration. Expansion was markedly less on the left side. The percussion note did not show any definite change over the fronts, but there was marked dullness over the lower left axilla and back. The breath sounds were somewhat less well heard over the upper left front than over the same area on the right side. In the left axilla and over the lower left back they were very distant. Over a small area near the angle of the scapula they were tubular but heard distantly. On different examinations the breath sounds were found to vary greatly in loudness. Râles were heard on some occasions, but at other times not a single one was noted. The signs suggested that the obstruction was probably due largely to swelling of the mucous membrane and granulations. At bronchoscopy (Jackson) a large mass of granulation tissue was found projecting from the left bronchus and bloody pus came from below. The foreign body was found embedded in the swollen mucosa. After its removal no change was found in the signs except an increased number of râles. Two days later the breath sounds were better heard, but there was little change in expansion or on percussion. Six days later the expansion was decidedly better and the dullness was less. The breath sounds were still distant on quiet breathing, but were well heard on deep breathing.

Tacks, Nails, and Screws.

These gain entrance to the air passages comparatively frequently and usually give a fairly clear-cut picture. The head of a tack enters the bronchus first and passes down until it can travel no farther. The blocking of the bronchus is usually complete, or nearly so, by the object itself, and if any opening remains the resulting swelling of the mucous membrane soon closes it. The signs are those of complete blocking of the bronchus. In a recent case a thumb tack was so placed that the diameter of the head was parallel to the long axis of the bronchus. The only sign was decreased expansion, but as it had only been in the bronchus for one day, very little irritation had been set up. A nail may not block the bronchus itself, and air may pass it, for some time at any rate. Illustrative cases are as follows (see Figs. 2, 3, and 4):—

Tack in Bronchus.—A child, aged 3½ years, was admitted on Oct. 30th, 1923, with cough and fever. Two days before, while lying on his back on the floor, he had a sudden choking attack and became very blue. The mother did not know of his having anything in the mouth, but later the child said that he had swallowed a tack. Examination showed markedly diminished expansion on the right side, with dullness over the middle and lower lobes. The breath sounds were somewhat decreased over the upper right lobe and very distant over the middle and lower lobes. A few coarse râles were heard. The X ray showed considerable secretion in the middle lobe and less in the lower lobe. The tack was found in the right bronchus. Immediately after removal the dullness was unchanged, but harsh breath sounds were heard everywhere without any râles.

In many of the tack cases the foreign body had been present for a considerable time, and in this event the changes are fairly uniform. There is a rapid formation of pus which may be retained or small amounts may escape occasionally. Changes result in the lung and bronchi, such as abscess, cavity formation, and bronchiectasis. Some degree of fibrosis is common. An illustrative case is the following:—

Tack in Bronchus.—A girl, aged 14 years, was admitted on Jan. 6th, 1923, complaining of cough and fever. In October, 1920, the child had a tack in her mouth. While laughing the tack disappeared, and this was followed by a severe attack of coughing and choking. The child did not tell anyone about this. In December, 1920, the patient had an illness which was diagnosed as broncho-pneumonia, and a second such attack in March, 1921. Since this last attack the cough has been constant. This was dry for a time, but in November, 1922, sputum began to be brought up, a suspicion of lung abscess was aroused, and an X ray examination made, which showed a tack in the right lung. An unsuccessful bronchoscopy was done elsewhere, and a very severe reaction followed this. On examination there was marked limitation of expansion on the right side, especially below, with dullness from about the third rib. Over this area the breath sounds were rather distant and of blowing quality, with many râles of various kinds. The vocal fremitus and voice sounds were distinctly increased. About the angle of the scapula there was an area of whispering pectoriloquy. The breath had a very foul odour. There was no wheeze. A great many râles were heard over the area of dullness and the signs suggested either abscess or bronchiectasis below the foreign body. The X ray study showed the tack in the posterior branch of the furthermost bronchus, head downward, with very marked changes in the lower right and middle lobe. At bronchoscopy (Jackson) the bronchus was found to be narrowed below the middle lobe, and below this it had widened into a cavity deep down in which there was a mass of granulation tissue in which the tack was buried. Within a couple of days there was distinctly more expansion on the right side.

Teeth and Dental Material.

The aspiration of teeth, or portions of teeth, usually occurs when extraction is done under anæsthesia. These cases are not uncommon and their comparative frequency suggests the need of the greatest care by dentists. In some of the cases the dentist was positive that every extracted tooth was safely accounted for, but one was found in a bronchus just the same. Portions of dental material may become loose and be aspirated. In a few cases a small piece of apparatus slipped down while the dentist was at work.

Tooth in Bronchus.—A woman, aged 29 years, was admitted on March 19th, 1923, complaining of cough, much wheezing, and pain in the right chest. On Jan. 5th, 1923, she had some teeth extracted under gas anæsthesia. Immediately after she had a sensation of something having lodged in her throat and wheezing was noted soon after. Cough followed with foul-tasting sputum. A week after the extraction she brought up blood-tinged sputum. The patient showed marked decreased expansion on the right side, especially below. The note over the left lung and upper right lobe was clear; over the middle and lower right lobes there was marked dullness. The breath sounds were well heard over the upper right lobe accompanied by many musical râles. The signs over the right lobes varied markedly. At one time breath sounds could hardly be heard and again they were present with little alteration. Wheezing and musical râles were always heard. The signs suggested obstruction of the bronchi of the middle and lower lobes which was not complete and varied from time to time. The tooth was found crosswise in the bronchus just below the orifice of the middle lobe bronchus, which was involved by the swelling of the mucosa. After removal the breath sounds were well heard without any râles. In four days the signs were normal. In this case there was no permanent damage and the patient recovered completely.

A woman, aged 20 years, was admitted on April 17th, 1923, complaining of cough and loss of weight. Three months before she had three teeth extracted under gas and immediately after she stated that she had a choking sensation during the extraction and believed that she had swallowed a tooth. This was laughed at and declared to be impossible. Cough came on immediately after and has grown more severe. The sputum has increased in amount and become foul. The patient did not have any dyspnœa or wheeze, but had a very distressing cough. There was less expansion on the left side with a normal percussion note and harsh breath sounds over the upper lobe. Over the lower left lobe there was dullness, with absence of vocal fremitus and breath and voice sounds. The tooth was found blocking the lower lobe bronchus. Immediately after removal there were many coarse râles heard over the lower lobe. She made an excellent recovery.

The next case shows the results of a long sojourn of a tooth in a bronchus.

A man, aged 51 years, was admitted on April 21st, 1919, complaining of cough, foul sputum, and dyspnœa on exertion. On Nov. 29th, 1914, he had two teeth extracted under ether anæsthesia. He noticed nothing of moment until Dec. 8th, 1914, when he was taken ill with "pneumonia," and spent nine weeks in bed. He had high fever (up to 105° F.) and violent cough with large amounts of foul sputum. A negative exploratory puncture was made during the illness apparently under the idea that he had empyema. After 14 weeks he was able to resume his work. Ever since he has had cough with profuse sputum, foul-smelling and sometimes bloody. His general health has been poor and he has been in bed frequently with fever. On examination the fingers and toes showed marked clubbing. The thorax was rounded and showed very little expansion. On deep breathing decreased movement of the lower right side was evident. The left lung was clear. There was dullness over the lower right lobe and the breath sounds had somewhat of a blowing quality. A few râles were heard on quiet breathing, which were louder and coarser on deep breathing. On bronchoscopy there was a stricture found and many fistulæ lined with granulation tissue. These were dilated and explored. On a second bronchoscopy the tooth was found embedded in tissue without any direct opening to it. When grasped by the forceps the tooth crumbled and only a part could be removed. Two subsequent bronchoscopies were required to remove all the fragments.

Nuts, Grains of Corn, and Vegetable Material.

These organic substances form a most important group as there is always great danger of death resulting in a short time from toxæmia and septic infection, especially in young children. In the United States the peanut is the most common member of this group to be aspirated. It is a common article of diet, and judging from our experience is frequently given to young children either as the nut itself or in the form of candy containing peanuts. In many cases the child is unable to chew the nut and endeavours to swallow a fairly large portion; choking results and the nut is aspirated. To the resulting condition Jackson and Spencer[2] gave the name arachidic bronchitis. It is worthy of discussion in some detail.

Arachidic Bronchitis.—Age is an important factor as the cases are almost always in children and frequently in those below the age of two years. Dr. Jackson has had only one case in an adult and he was a physician. The severity of the resulting symptoms varies with the age; the younger the child, the more severe and dangerous they are. The condition produced is a very remarkable one. There is a most acute œdematous laryngo-tracheo-bronchitis with the formation of thick pus. The rapidity of development of the inflammatory process is remarkable. It may be marked in a few hours. The purulent secretion forms very rapidly, is often extremely profuse, and in some cases is most tenacious, so that moulds of the bronchi form, much like those occurring in fibrinous bronchitis. The process is most marked about the site of the nut or grain, but tends to spread upwards if the nut is in a lower lobe bronchus so that the whole bronchial tree is involved. The bronchi of the other lung also become involved to some extent. The cause of this intense irritation is not clear. Two globulins are found in the peanut, arachin and conarachin, and it has been suggested that these may contain some special irritant.

The effects produced are very striking. There is evidence of severe infection, shown by fever, which is often high, leucocytosis, and severe toxæmia. This latter is usually marked and the picture is sometimes not unlike that seen in malignant diphtheria. Death may follow in a short time if the nut is not removed. Jackson mentions that death occurred in two weeks in three patients in whom bronchoscopy was not allowed. The extreme dyspnœa with infection and toxæmia rapidly exhausts the patients. Striking features are the rapid pulse- and respiration-rates, which remain fairly constant despite variations in the temperature. If the peanut remains for a few days there is the accumulation of enormous amounts of pus below it and the rapid formation of one, or usually many, abscess cavities.

The clinical picture is usually a remarkable one, and the younger the patient the more acute the symptoms. There is great dyspnœa and restlessness with marked cyanosis. There is toxæmia from the septic infection and asphyxiation from the obstruction due to the secretion and swelling of the mucous membrane. In some patients the cyanosis is succeeded by pallor which may be deceptive, for instead of being a sign of improvement it means exhaustion and the approach of death. Cough is frequent and paroxysmal; sometimes a pink purulent sputum is brought up; often nothing can be dislodged. The "asthmatoid wheeze" is frequently present. A point of importance is that the voice is rarely lost. With the marked dyspnœa and asphyxiation the picture is a most distressing one, and much like that of laryngeal diphtheria. The usual signs of obstruction to inspiration are well marked. The physical findings are shown by the report of some cases.

Peanut in Bronchus.—A child, aged 22 months, was admitted on Nov. 6th, 1923, with a history that at 8 A.M. on the day of admission she was eating peanuts. Suddenly she began to cough and became red in the face; wheezing respiration was noted immediately. On admission the child was very restless, cyanotic, and dyspnœic. There was a distinct wheeze with convulsive attacks of coughing. The left side was distended and showed absence of expansion. The note over the left side had a tympanitic quality with absence of the breath sounds. The X ray study showed marked *obstructive* emphysema of the left lung. Bronchoscopy was done the same day and the trachea and both bronchial orifices were intensely red and inflamed. The peanut was removed from the left bronchus a little over eight hours from the time of aspiration. The child did not improve and continued to have fever with signs suggesting the presence of secretion in the lower lobes. Death occurred on Dec. 8th. At autopsy there was marked inflammation in the trachea and bronchi, the mucosa being covered by purulent material. On the right side there was considerable suppuration. Death was apparently due to septic infection.

This case shows the serious results which may follow the aspiration of a nut. The foreign body was removed after being eight hours in the bronchus, but the infectious process set up by it progressed until death resulted. The rapid development of the inflammatory process is to be noted. It suggests an action like that due to an irritant gas. The condition illustrates the *ball-valve action* of a foreign body; air was allowed to pass into the left lung but could not get out. It is very easy in such cases to mistake the affected side unless a careful examination is made. In the next case there was not complete blocking of the bronchus and air could pass in and out.

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[2] Jour. Amer. Med. Assn., 1919, lxxiii, 672.

Peanut in Bronchus.—A child, aged 2 years, was admitted on Jan. 25th, 1923, with strangling cough and wheezing respiration. On the previous day, while eating peanuts, the child began to cry and there was an attack of strangling and dyspnœa. There was a loud wheeze both with inspiration and expiration and some dyspnœa, but no marked cyanosis. The expansion was decreased on the right side. The left side showed hyper-resonance with harsh breath sounds. Over the right side the note generally had a tympanitic quality with some dullness over the lower back. The breath sounds varied greatly. At times both inspiration and expiration could be heard, accompanied by very curious high-pitched whistling and wheezing râles. The heart was displaced to the left. The signs suggested that the peanut was in the right main bronchus, but was not causing complete obstruction. Bronchoscopy was done at once. There was marked swelling of the subglottic tissues with considerable pus in the trachea and bronchi. The peanut was removed from the right main bronchus. Tracheotomy had to be done subsequently and then followed a struggle for the life of the child which required frequent bronchoscopies, an average of three or four a day for some days, because large crusts formed in the bronchi. These caused marked obstruction and at times air was prevented from entering a whole lung or a lobe by them. On one occasion the child stopped breathing, but fortunately it was possible to remove a large cast of a bronchus at once. Constant aspiration of the trachea had to be done. The condition gradually improved and the child was discharged well on March 15th. Only the repeated bronchoscopies with the removal of the material in the bronchi saved the child's life, as the cough reflex seemed to be completely abolished.

Here, again, the remarkable rapidity of the process is shown. Within about 24 hours after aspiration large amounts of pus had formed. The persistent formation of the "crusts" in the bronchi was an unusual feature.

A very striking feature of the foreign bodies belonging to the vegetable kingdom is the rapidity with which acute inflammatory changes are produced. This is especially true of the peanut, but applies also to other vegetable substances. Beans and grains of corn are not infrequently aspirated, and the following cases illustrate the rapidity with which inflammatory changes follow :—

Corn in Bronchus.—A child, aged 14 months, was admitted on Feb. 25th, 1923, with the history that on the day of admission she was playing with grains of corn (maize) and suddenly began to choke and cough, at the same time becoming very blue. A few hours later she showed great distress, cyanosis, marked inspiratory dyspnœa, cough, and a loud wheeze. At times with the cough there was a distinct slap which could be heard and felt over the larynx. There was well-marked inspiratory retraction both above the sternum and clavicles and in the epigastrium. Expansion seemed equal as a rule, but occasionally one side was limited. Percussion was resonant throughout, and on auscultation the breath sounds were rough and harsh with an occasional shutting off of all breath sounds. Coarse râles were heard on both sides. The diagnosis was made of a foreign body in the trachea which occasionally passed temporarily into a main bronchus. Bronchoscopy was done promptly ; very marked swelling of the larynx and subglottic tissues was found, with marked inflammation of the tracheal mucosa and considerable secretion. The grain of corn was found to be shifting about and was finally removed from the right bronchus. Tracheotomy had to be done subsequently on account of the laryngeal obstruction ; the child made a good recovery.

Bean in Bronchus.—A child, aged 13 months, was admitted on March 20th, 1923, with a history of playing with beans the day before. She suddenly coughed and choked, and when the mother ran to her the child had great dyspnœa and wheezing respiration. On examination the child was very ill, had marked dyspnœa, and a well-marked asthmatoid wheeze. The signs were much as in the previous case. Bronchoscopy was done at once and marked inflammation and considerable secretion found. The bean was found at the bifurcation of the trachea partially in the right bronchus.

Particular emphasis should be placed on the *acuteness* of the symptoms. Within a few hours the child may be in danger of death. In the cases quoted death would have followed very shortly unless the foreign body had been removed. There is no reason to suppose that such cases are only of recent occurrence, and there are no statistics which show the number of deaths from this cause. It must not be supposed that all cases are as acute as those quoted. In older children the picture is much less acute. There must be a great difference in the individual reaction or in the amount of irritation set up by the vegetable substance. This is shown in the following case :—

Peanut in Bronchus.—A child, aged 2½ years, was admitted on June 15th, 1923, with a history of having been eating candy which contained peanuts on June 4th, 1923. A portion was aspirated and following an attack of choking there were cough and distress. The signs showed the nut to be in the left lower lobe bronchus and that the blocking was not complete as the amount of air in the lobe varied from day to day. At bronchoscopy (Jackson) there was a great deal of swelling of the mucous membrane and granulation tissue in the lower left lobe bronchus. Recovery was rapid, and a week after removal the expansion was equal on the two sides.

Miscellaneous Objects.

There are many curious objects which gain entrance to the bronchi, only a few of which can be noted. Fig. 5 shows a broken tracheotomy tube impacted in the left bronchus.

Portion of Rubber in Bronchus.—A boy, aged 5 years, was admitted on Sept. 29th, 1923, complaining of constant wheezing which was greatly increased during sleep. About three weeks before the child was playing with a piece of rubber and suddenly began to cough, saying that the rubber had gone down his throat. Wheezing was noted at once and has continued. The child was not dyspnœic or cyanotic. The wheezing sound was heard occasionally. Inspection showed decreased expansion over the lower right thorax. The note over the upper left lung was slightly hyper-resonant ; over the lower left lung there was slight dullness. There was dullness over the lower right lobe more than on the left side. The breath sounds were generally harsh with coarse râles over the lower left lung. Over the lower right lung the breath sounds were distant and accompanied by coarse, gurgling râles. The signs varied from day to day and were puzzling. We regarded the foreign body as being in the lower right lobe and the signs on the left side as due to secretion which had passed over from the right side. Repeated X ray studies were negative at first, but later the right diaphragm moved less and peribronchial thickening became more marked on the right side. Later there was increased density in the lower right lobe. The first bronchoscopy (Jackson) on Oct. 3rd showed inflammation of the right bronchus with many granulations and some muco-pus. A foreign body was not seen. After this tracheotomy had to be done. At a second bronchoscopy on Oct. 31st, after inspiration of pus and removal of granulations, a small black object was seen which after removal was found to be a piece of rubber. Recovery was rapid ; the breath sounds soon were heard over the lower right lobe, and the child was discharged well.

In this case the diagnosis was only reached after repeated examinations and after the signs in the lower right lobe became more definite. The collection of secretion in the lower part of the opposite lung may be a source of great difficulty, as in this case.

Cork in Bronchus.—The patient, aged 19 years, was admitted on March 8th, 1923, complaining of cough, wheezing respiration, and attacks of cyanosis. On Feb. 12th, 1923, she had a small piece of cork in her mouth about the size of the rubber on the end of a pencil. She laughed and the cork was aspirated. Cough followed at once and has continued with wheezing respiration. A few days later she was supposed to have pneumonia. On admission she had very severe cough and marked wheezing, but not marked dyspnœa. Expansion was less on the right side, especially below. There was some dullness over the middle right lobe and marked dullness over the lower lobe, except for an area of resonance over the lower right back. Vocal fremitus was decreased over the lower lobe. The breath sounds were heard but diminished over the middle lobe. On quiet breathing no breath sounds were heard over the lower right lobe, but on deep breathing they were heard with a number of squeaky râles. Over the upper right lobe there were normal resonance and breath sounds with occasional râles. The X ray study showed marked changes over the lower right lobe. At bronchoscopy (Jackson) the cork was found in the lower lobe bronchus completely surrounded by granulation tissue, which extended up to the orifice of the middle lobe bronchus.

This case illustrates the relationship between the local conditions in the bronchus and the physical signs. The absence of breath sounds on quiet breathing and their presence on deep breathing suggests the presence of granulations which usually extend above the foreign body. The extra effort of deep respiration is sufficient to overcome the obstruction. Signs which are much less marked in a higher lobe, as in this case, suggest granulations which partially obstruct the higher bronchus. The finding of some resonance, often tympany, in the lower back when there is considerable blocking of the lower lobe bronchus is common. The note between the scapular line and the spine may show some resonance—often a combination of tympany and dullness—while from the scapular line to the axilla and in the axilla there is flatness.

Piece of Tin in Bronchus.—A child, aged 11 years, was admitted on Dec. 19th, 1923, with the statement that he had a piece of tin in a bronchus. On Dec. 2nd, 1923, he picked up a piece of tin and put it in his mouth. He laughed and the tin disappeared. For a few days he had a croupy cough which did not continue. Five unsuccessful attempts at removal had been made elsewhere. The child did not have any cough, dyspnœa, or wheezing. There was less expansion on the right side with dullness over the lower lobe, which was least marked between the scapular line and the spine at the base. Vocal fremitus was absent over the lower lobe. Breath sounds were heard distantly over the lower lobe on deep breathing. The signs varied from day to day, and at times over the middle lobe there was some dullness and decreased breath sounds. At bronchoscopy (Jackson) the object was found deep in a lower lobe bronchus. Removal was difficult as a sharp, thin edge at one end had made a cavity by ulceration. Recovery was rapid and he was discharged with normal findings in the lung.

Top of Pencil in Bronchus.—A boy, aged 6 years, was admitted on March 16th, 1920, complaining of cough and dyspnœa. On March 13th, 1920, while holding the metal top of a pencil in his mouth, he fell and the object disappeared. The child choked and strangled for a time afterwards. Dyspnœa and paroxysmal cough followed. The child was very ill and extremely dyspnœic and cyanotic. There was absence of movement of the left side of the chest and the heart was displaced far to the left. There was dullness throughout the left lung, which was less marked over the upper lobe. The breath sounds were heard, intensely tubular with a few râles, over the upper left lobe ; they were absent over the greater part of the lower left lobe, where no râles were heard. Over the lower left back very distant blowing breathing was heard. The X ray showed a dense shadow over the whole of the left lung with the heart displaced to the left. There was evidently collapse of the left lung. At bronchoscopy the body was found in the left lower lobe bronchus, the upper edge almost occluding the orifice of the upper lobe bronchus. It was very tightly impacted. The child was examined at once after the removal of the foreign body. There was resonance throughout the left side with a tympanitic quality. Breath sounds were heard everywhere, over the upper lobe slightly harsh and over the lower lobe harsher than normal and with many coarse bubbling râles. The recovery was rapid.

The rapid change in the breath sounds after removal of the foreign body is of interest. Within two minutes the intense tubular breathing over the upper left lobe was replaced by vesicular breath sounds only slightly harsher than normal. The difference in signs over the upper and lower left lobes is puzzling, as both seemed to be affected. This is noted not infrequently when the foreign body is so situated that it obstructs the lower lobe bronchus completely and the upper lobe bronchus partially. In this case the tubular breathing over the upper lobe might naturally have suggested pneumonia.

Cases of Long Duration.

These are interesting as demonstrations of how tolerant the lung can be of a foreign body. The longest period in Dr. Jackson's series is 36 years (two cases). The foreign body is usually in a lower lobe bronchus and marked changes are always present. Abscess formation, bronchiectasis, and fibroid changes are to be expected. The clinical picture is due to these and does not offer anything peculiar. The general health suffers as from any long-continued lung suppuration, and clubbing of the fingers and toes is common. In some of the patients a diagnosis of tuberculosis is made for which there is little, if any, excuse. In some an X ray study done by a physician newly consulted has given the diagnosis. The following case illustrates many of the features :—

Nail in Bronchus.—A boy, aged 12 years, was admitted on Nov. 27th, 1922, complaining of wheezing respiration and occasional cough. On Sept. 20th, 1912, he had a number of shingle nails in the mouth and in falling aspirated one of them. No clear account of the following symptoms could be obtained. In November, 1912, he was supposed to have an attack of pneumonia and several illnesses since then were also diagnosed as pneumonia. He has had wheezing respiration since the aspiration and some cough, always worse on violent exertion. An X ray plate was taken after many years of symptoms and the presence of the nail discovered. Six unsuccessful attempts at bronchoscopy had been made elsewhere. The boy was well nourished and did not show any dyspnœa or wheeze when quiet. The sputum was profuse and foul. Expansion was almost entirely absent over the left side except at the apex. Vocal fremitus was present over the upper lobe and absent over the lower lobe. There was dullness over the left side, more marked and with greater resistance over the lower lobe. Over the upper lobe the breath sounds were harsh with prolonged expiration and an extraordinary number of râles. Over the lower lobe the breath sounds were hardly heard, but there were a large number of râles. The heart was displaced to the left. The X ray study showed an apparent absence of normal lung tissue in the left side and many cavities. The nail was found in abnormal tissue. The cough and sputum decreased greatly, but the signs in the lung did not alter materially.

Complications.

Considering the severity of the symptoms in many of the cases and the long duration of bronchial infection these are relatively few. Abscess and bronchiectasis may be regarded more as sequels than as complications. They offer no special peculiarity and have much the same features as when they occur from other causes. The formation of a bronchial stricture is not uncommon. This may interfere with drainage and add to the difficulty of removal of the foreign body. The long-continued suppuration may be accompanied by disturbance of the general health and clubbing of the fingers.

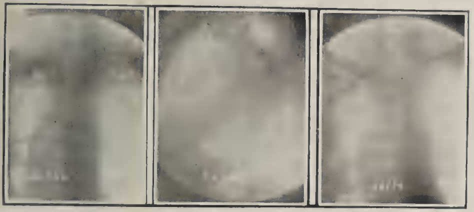
Pneumothorax.—This usually occurs in very acute cases in which presumably there is rupture of an air vesicle from the severe paroxysms of coughing. Its occurrence adds to the severity of the dyspnœa and complicates the diagnosis, difficulty in which evidently occurs particularly in non-opaque foreign bodies. Careful judgment is necessary to decide when bronchoscopy should be done if it seems justified for diagnosis or is indicated for removal of a diagnosed foreign body. Constant watch should be kept to recognise the presence of pyo-pneumothorax. It is evident that no rules can be given as to diagnosis in these cases, and in the absence of any suggestive history of aspiration of a foreign body it may be very difficult. The X ray study is definite in the case of an opaque foreign body. An escape of air into the mediastinal tissues is not very uncommon and does not appear to be of serious import.

Empyema.—This is rare but has occurred in a few cases with a long sojourn of the foreign body in bronchus and abscess formation. The supposition is that infection of the pleura occurs by extension from the lung. The recognition of this complication is usually not difficult by the physical signs, and if necessary aspiration removes any doubt. A difficulty is in the decision whether the foreign body should be removed before draining the empyema. As these patients are usually very toxic and seriously ill, our usual practice has been to drain the empyema first. An illustrative case is as follows :—

A boy, aged 8 years, was admitted on Dec. 5th, 1923, complaining of cough. Six years before he was running while holding a small staple in his mouth. In some way he aspirated the staple. The physicians who saw him made a diagnosis of diphtheria and his breathing became so difficult that tracheotomy was done. After two weeks the acute features disappeared, but some dyspnœa remained and cough has continued to the present. In the past year the child has been losing weight. Finally, an X ray plate was taken, which showed the foreign body. (Fig. 6.) The child was very ill on admission, emaciated, and anæmic. He had a hoarse cough but no wheeze. The left chest showed absence of expansion and flatness over the lower part with dullness above. There was marked resistance over the lower part. The breath sounds were not heard. The right side was hyper-resonant and the breath sounds were harsh. The heart was displaced to the right. The X ray study showed a staple in the left bronchus and a thick shadow throughout. By an exploratory puncture thick pus was obtained. There was an irregular temperature curve, the maximum being

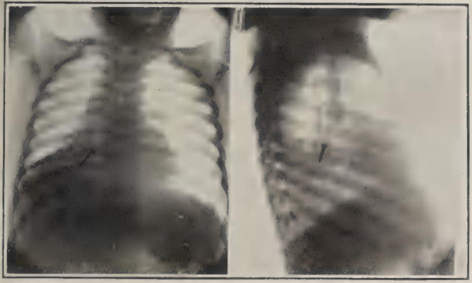
PROF. T. McCRAE: FOREIGN BODIES IN THE BRONCHI.

FIG. 1.



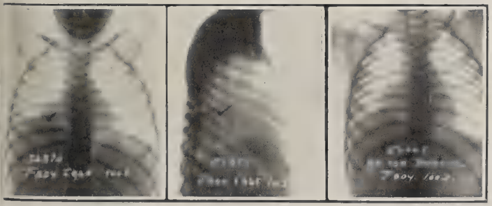
Safety-pin in bronchus.

FIG. 2.



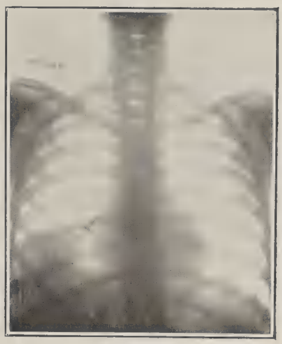
Nail with the head up, which is unusual. Marked changes in the lower right lobe.

FIG. 3.



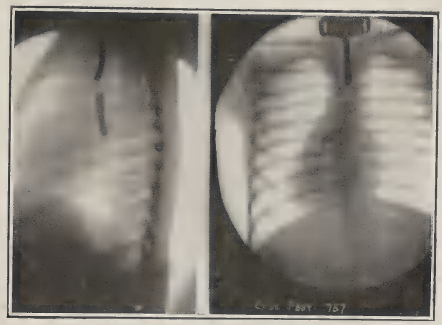
ack in right lower lobe bronchus for one month. Patient aged 5 years. Much pus and many granulations were found.

FIG. 4.



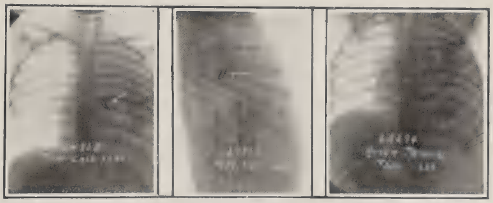
Tack in right lower lobe bronchus causing complete obstruction. The signs disappeared rapidly after removal.

FIG. 5.



Portion of broken tracheotomy tube with the greater part in the left bronchus but the upper end in the trachea. It had been present for two days. Expansion was diminished on the left side with marked changes on auscultation but not on percussion.

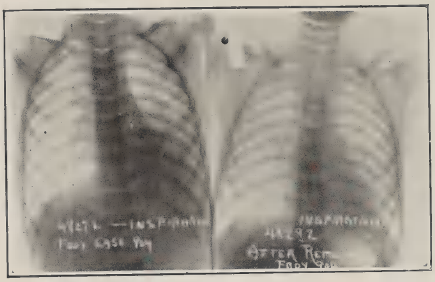
FIG. 6.



Staple in left bronchus for six years. Empyema.

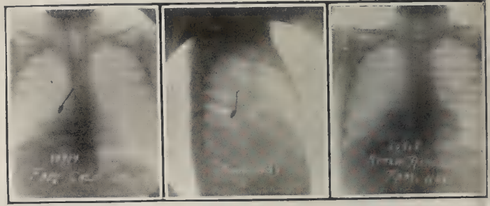
PROF. McCRAE: FOREIGN BODIES IN THE BRONCHI.

FIG. 7.



Peanut case showing difference in the amount of air in the lungs and displacement of the heart.

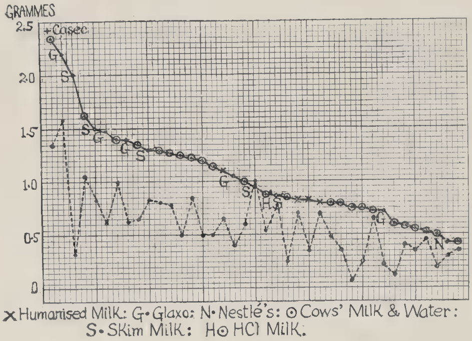
FIG. 8.



Part of a metallic toy. Child aged 6 years. The foreign body had been present for seven days. There were marked signs over the lower right lobe. Within two days after removal the signs had disappeared.

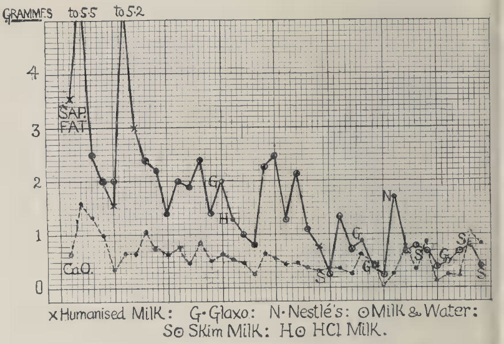
DR. L. G. PARSONS: WASTING DISORDERS OF EARLY INFANCY.

CHART 1.



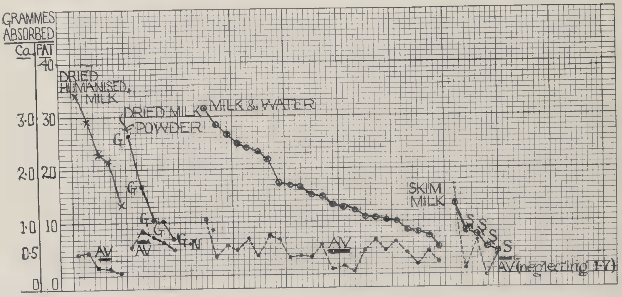
Calcium (CaO) intake and output in grammes per 24 hours.

CHART 3.



Relation between calcium output (grammes per 24 hours) and saponified fat output (grammes per 24 hours) for various fat intakes.

CHART 2.



Relation between weight of calcium absorbed and weight of fat absorbed. Av. = average. Other references as in Chart 1.

103° to 104° F. It was decided to drain the empyema first, and this was done. The child did very well and improved steadily. On Dec. 5th the foreign body was removed. The left bronchus contained many granulations. The child was discharged on Dec. 22nd greatly improved, but with signs of extensive change in the left lung and thickening of the pleura.

Hæmorrhage.—Small amounts of blood may be brought up soon after the aspiration, but profuse bleeding usually occurs after a long sojourn of the foreign body in the lung. An object with a sharp edge may erode the mucous membrane and bleeding occurs from the ulcer produced. With abscess or bronchiectasis the hæmorrhage may be in large amounts and death may result from it. In one patient admitted to my service a scarf-pin had been in the lung for 36 years and a squamous-celled carcinoma developed. The foreign body was recognised and bronchoscopy done, much foul pus being removed, but the bronchoscopy was not prolonged on account of her condition. She died four days later from a profuse hæmorrhage. The case has been reported by Weiss and Krusen.[3]

Goulstonian Lectures

ON SOME

WASTING DISORDERS OF EARLY INFANCY.

Delivered before the Royal College of Physicians of London

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(*With Charts on Plate.*)

LECTURE II.

Delivered on March 27th.

It is frequently found that atrophic children do extremely well for a time when fed on a low fat dietary—e.g., skimmed milk or a mixture of whole and skimmed milk—particularly if there has been diarrhœa. If these cases are followed up, after a time the gains become less; later the weight curve becomes horizontal, or even shows a downward tendency. If, however, the fat content of the food is increased, the weight curve ascends again. These facts are, of course, exactly parallelled by well-known experimental results. Thus, if a diet lacking in vitamin A is given to young growing rats, growth, under favourable conditions, may continue at a nearly normal rate, due presumably to using surplus vitamin A in the body, until the supply is exhausted, when growth slackens and usually ceases. Often a rather rapid loss of weight begins shortly afterwards, and the animal goes into a condition of general decline, leading to death. If vitamin A is given growth is renewed. In milk vitamin A is divided about equally between the fat globules and the aqueous part; in other words, skimmed milk contains only about one-half the vitamin A present in whole milk (McCollum).[1]

Recent Experimental Findings on Vitamin-A Deficiency.

Some further experimental findings on vitamin-A deficiency, which may prove to be of importance in infantile atrophy, have recently been published. By feeding young rats on a diet deficient in vitamin A, Cramer[2] found that atrophy of the intestinal mucous membrane occurred, with an increase in bacterial content of the intestine, and evidence of the invasion of the villi with bacteria. Gross[3] found that when adult rats were fed on such a diet, there was a marked acceleration of the passage of food through the alimentary canal. The latter observation may help to explain the clinical fact to which I have already drawn attention, that in some atrophic infants the passage of food through the alimentary tract is much more rapid than in others. Increase in bacterial content of the intestine also occurs in atrophic children under certain conditions, but up to the present there has been no real evidence of the occurrence of atrophy and consequent loss of absorptive power of the intestinal mucous membrane. Gross did not find any intestinal atrophy in his animals, but it is probably unfair to compare the two sets of experiments, for in one the deficient diet was kept up for a longer period and young rats were used, whereas in the other the animals were adults.

Following the important observation of Gowland Hopkins[4] that oxidation destroys fat-soluble A, McCollum, Simmonds, Becker and Shipley[5] have found that it is possible to prove the presence of two substances in certain food fats. One of these is fat-soluble A, and the other, a substance which regulates calcium metabolism. Butter fat is a better source of the fat-soluble A than of the other substance, whereas cod-liver oil is a good source of both. They discuss the possibility of both these substances being actually two properties of one and the same substance, but their view is quite definitely that there are two distinct substances, "a special calcium depositing vitamin which is often associated with fat-soluble A, but is distinct from it." They demonstrated the absence of fat-soluble A in the food fat by its inability to effect a cure of xerophthalmia when given to animals in which this condition had been experimentally produced; and the absence of the calcium depositing vitamin, by the inability of the food fat to produce a "white line" in X ray negatives, when given to rats previously rendered rachitic by dieting. The "white line" is a line of deposition of calcium salts running transversely across the cartilage, which is produced when food containing fat-soluble A in any quantity, and, according to these researches, the calcium containing vitamin also is suddenly introduced into the diet of a rachitic rat. These observations, which have been confirmed by Steenbock, Hart, Jones, and Black,[35] are of considerable importance with regard to the rôle of fats in infantile atrophy and infant feeding generally.

The condition of xerophthalmia is very rarely seen in the children's clinics of this country. During the last 13 years there have been only 13 cases of the mild form of xerophthalmia—i.e., xerosis of the conjunctiva—seen at the Birmingham and Midland Eye Hospital, and not one case of the severe form of the disease keratomalacia. On the continent, and particularly in Denmark, during the period of the war the disease has been observed much more frequently. Bloch[6] tells us that although he had seen xerophthalmia in Denmark from 1912 onwards, during the war the number was greatly increased. Denmark is a dairy-farming country which manufactures and exports butter. During the war, owing to the blockade, the prices of butter and fresh milk rose so high that the poor could scarcely procure either of them. Buttermilk and separated milk could, however, always be obtained at a low price, and were therefore largely used for the artificial feeding of infants. In some cases an excess of carbohydrate food was given, either alone, or in combination with separated milk. As a result of these methods of feeding, Bloch was able to recognise two groups of cases, in both of which xerophthalmia occurred. He labelled these dystrophia alipogenetica and dystrophia amylogenetica, respectively. To the latter group of cases I will refer later. In dystrophia alipogenetica the growth of the child stopped, there was some wasting, and xerophthalmia developed. The proof that these symptoms were due to the absence of fat containing fat-soluble A occurred when the Danish Government took over the control of butter and rationed it, allowing 250 g. weekly to each adult and child. Xerophthalmia ceased simultaneously. The rationing of butter came to an end after the termination of the war and xerophthalmia recurred, but its occurrence was rare in comparison with the war period, and the severe cases were no longer seen. In Germany during the war xerophthalmia was scarcely ever seen, due to the fact that all the milk and milk products were rationed, so that every little child obtained a certain amount daily, or if the child was breast-fed, the mother was allowed the milk. Bloch made an observation which is of considerable interest in the light of the experiments of McCollum and his co-workers—namely, that xerophthalmia and rickets were very rarely met with in the same child.

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[3] Jour. Amer Med. Assn., 1922, lxxviii., 506.

CALCIUM METABOLISM IN ATROPHY.

The literature on the subject of calcium metabolism, and its relation to fat is very extensive, and many diverse views are expressed. Some believe that a high fat intake results in a large fat excretion, accompanied by a serious loss of bases, especially calcium (Czerny). Others believe that a liberal intake of calcium, which is frequent in children fed on cows' milk, results in an excessive excretion of calcium, which is accompanied by a harmful loss of fat; or the excess may be "ingested, entering the body fluids and tissues in organic combination and perhaps subsequently setting up a toxic condition."[7] Others again (Holt) say that there is no evidence of these results, and believe that an ample intake of both fat and calcium produces only beneficial results.

With the exception of Utheim's[8] series of 17 cases, I know of no extended observations on calcium metabolism in infantile atrophy. In 39 of my cases in which fat estimations of the stool were done, observations on calcium metabolism were also made. The stools were ashed, and calcium was determined in the weighed ash by the McCrudden[9] method. This is the method used by Utheim and also by Holt, Courtney, and Fales, who investigated the calcium metabolism in a series of normal children, children suffering from diarrhœa, and children suffering from rickets. According to the latter workers, calcium metabolism results are only truly comparable when the same methods are used.

Calcium has not been estimated in the urine, so that the observations do not give absolutely definite "balance" figures, but all observers agree that the amount excreted in the urine is very small (less than 4 per cent. according to Findlay, Paton, and Sharpe[10]), and the omission of urinary calcium does not therefore affect the figures very much. From our observations we have found that calcium output varies fairly closely with the weight of the dried fæces; this is so not only when comparing different children, but also in the daily variations of calcium output and fæcal weight in the same child. From a consideration of Chart 1 (see plate) it will be seen that the curve of the output of calcium follows the curve of the intake, but only in a very general fashion, and that there are many exceptions. I would draw attention to the occurrence in one case of an output greater than intake (negative balance), and to at least four other cases in which the output closely approximates to the intake. The output of calcium follows more closely the intake of fat than the intake of calcium, provided that the fat intake is not less than 12 g. daily. When the fat intake is less than 12 g. daily, the calcium output shows no constant relationship to it, indeed, in several cases the calcium output is relatively and absolutely greater than in many cases having a higher fat intake.

The best absorption percentages were found when the fat intake was more than 2·5 g. per kg. of body-weight, and more than 0·19 g. of calcium per kg. of body-weight.

A comparison of different methods of feeding, to determine their calcium value to the atrophic child, is of interest. From Chart 2 it is seen that a variety of dried cows' milk made by the roller process shows a high amount of calcium absorbed, whereas a dried humanised milk, prepared by the spray method, shows a much lower amount absorbed. The ordinary cows' milk mixtures give an intermediate value. The possibility of the endogenous origin of some of the calcium in the fæces must, however, be borne in mind in assessing the value of these results, although the actual amount of the calcium intake in these feeds does vary in a similar fashion.

The actual figures obtained by us, and how they compare with those of other observers, can be seen from the table.

—	Holt, Courtney, and Fales: Bottle-fed infants, not atrophic.	Utheim: Atrophic infants.	Parsons and Hickmans: Atrophic infants.
	30 cases, ages 2–16 mos.	28 obs., 17 cases, 3 wks.–14 mos.	39 cases, to 6 mos.
Average absorption of CaO per kg. of body-weight.			
Average .	0·081 g.	0·067 g.	0·121 g.
Range ..	−0·064 to 0·133	−0·48 to 0·309	−0·02 to 0·335
Percentage absorption of CaO.			
Average .	37·2 %	24·9 %	43·3 %
Range ..	0 to 66·7 %	0 to 68·5 %	0 to 87·8 %
Daily total excretion of CaO.			
Average .	0·75 g.	0·71 g.	0·59 g.
Range ..	0·34 to 1·58 g.	0·125 to 2·136 g.	0·09 to 1·60 g.

Prior to Holt's paper, the recorded observations on calcium metabolism showed very much lower values for the absorption per kg. of body-weight, the actual figures for children under six months fed on cows' milk being 0·002 g. to 0·06 g. It is possible that differences in the method of estimating calcium may account for this. The figures, however, in the above table are all strictly comparable, since the same methods were used in each series of cases. Findlay, Paton, and Sharpe[10] state that infants under one year absorb 35 per cent. of the calcium intake. This value is, however, based on three cases only, the youngest being aged 6½ months. This child is the only one comparable with my cases, and it showed an absorption of 0·178 g. of calcium oxide per kg. of body-weight, or 56·4 per cent. of the intake.

By means of Chart 3 (see plate) I have compared the calcium output with the amounts of soaps found in dried fæces, from which it is evident that there is no definite parallelism between the excretion of calcium and the excretion of soap, although the curve of calcium excretion does rise with the highest readings for soap. In four instances it is interesting to note that the amount of calcium found in the fæces is greater than the amount of soap; this is probably due to the presence of calcium phosphate and calcium carbonate. These cases occurred in children who were on a very low fat diet, and the relatively high excretion of calcium may possibly be associated with the absence of a calcium depositing vitamin.

The amount of calcium lost as soap does not usually form a large proportion of the calcium intake; indeed, it has been stated that it probably does not amount to 30 per cent. (Holt). In our cases the average has been even less—namely, 17 per cent.—but one case showed the high figure of 65 per cent., and in this instance once again the baby was receiving a high fat content dried milk. The influence of calcium soaps on the daily fæcal weight is, according to Telfer,[11] considerable; this is so, not because of their own weight, but because they apparently have the property of occluding or incorporating the constituents of the intestinal contents in amounts proportional to their mass. This observer also states that he was unable to find any evidence of an appreciable degree of endogenous calcium in the fæces; Hamilton,[12] on the other hand, in a recent paper on the calcium metabolism of premature infants, advances the view that "probably the calcium soaps present in the fæces are to be regarded as a secondary product after the calcium has passed through the internal metabolism, when it is excreted into the intestine." The existence of a negative calcium balance, found by us in one case, and also by other observers, is difficult to explain in the absence of endogenous calcium in the fæces. The finding of low retention values for calcium, when the intake of calcium and fat is sufficient, also suggests the probability of the presence of endogenous calcium in the fæces.

Our results, therefore, show that many atrophic children can absorb calcium as well as normal children; and, indeed, that, as with fat, many are actually able to absorb larger amounts per kg. of body-weight than the amount usually absorbed by the atrophic child. These experimental results support the view that in atrophy an ample intake of fat and calcium produces only beneficial results, and that if feeds low in fat, or low in calcium, are given over a long period of time, the calcium retention may reach a dangerously low level. They also show that in atrophy low retention values and even a negative calcium balance may occur.

THE METABOLISM OF CARBOHYDRATES IN ATROPHY AND CARBOHYDRATE INDIGESTION.

In my first lecture I quoted Finkelstein's views on the harmfulness of lactose, and gave an account of the criticisms advanced against this view; actually in more recent years he has retreated somewhat from his original position, and has stated that considerable quantities of carbohydrate can be added to protein milk. I have also referred to the fact that, during the war period, Bloch[6] was able to separate a group of cases to which he gave the name dystrophia amylogenetica, and which are due to the giving of food containing an excess of carbohydrate, but showing an almost complete absence of fat. These cases presented the picture of Mehlnährschaden, the tissues of the child were œdematous, there was marked hypertonicity, as evidenced by the hands taking up the position known as "paw-hand" and by rigidity of the neck, xerophthalmia developed, and the children became very susceptible to infection. Later the dystrophy passed on to actual atrophy. Bloch thinks that the atrophic form is more likely to occur when new-born and delicate babies are fed for a long time on this type of food, whereas the hydræmic form is more likely to occur if the child is a few months old, and particularly if it was a strong child when the excessive carbohydrate feeding was started.

Photographs of these children show that the picture of carbohydrate atrophy is, with the exception of the state of the eyes, similar to that of the wasted hypertonic infant not infrequently seen in this country, even when there has not been excessive carbohydrate feeding. The picture of carbohydrate dystrophy shows œdema similar to, but more marked than, that which is also seen in this country characteristically associated with high carbohydrate feeding. Œdema, however, does occur apart from this form of diet, and for which there does not appear any obvious explanation, unless, indeed, it bears some relationship to the varying salt content of the whey as suggested by Finkelstein.

The blood-sugar of atrophic children has been shown by several investigators to be below normal; this also obtains in pyloric stenosis when wasting has occurred, as demonstrated by Barling and myself.[13] The sugar tolerance (the metabolic tolerance for sugar) of atrophic infants is very high (Helmholz and Sauer[14]); by giving a continuous intravenous injection of dextrose at the rate of 25 to 50 c.cm. per hour, Matill, Mayer, and Sauer[15] found that the tolerance of normal children is practically that of adults—namely, 0·8 to 0·9 g. of dextrose per kg. of body-weight per hour; whereas that of atrophic infants is considerably greater—namely, 1·4 to 1·8 g. per kg. per hour. Fleming[16] gave glucose by the mouth to atrophic infants and found that 3·0 g., in one case even 6·6 g. per kg., of body-weight could be tolerated without producing glycosuria. The limit of tolerance in adults is about 2·5 g. per kg. of body-weight. The same observer examined the respiratory exchange in atrophic infants and found that their respiratory quotients do not suggest that their tissues are unable to utilise either fats or carbohydrates.

From a consideration of the literature and the result of his own experiments, Fleming concludes that atrophic children use sugar extravagantly, and are in a state of sugar starvation, the result of failure of the digestive processes. He says: "Evidence is brought forward which suggests that failure to thrive is not caused by inability of the organism to utilise any of the proximate principles of food, but rather by gastro-intestinal disturbances, leading to defective absorption, especially of carbohydrates." He is supported in this view by Guy,[17] and this presumably can be taken as representing the view of the pathogenesis of atrophy held by the Glasgow school.

It is, of course, universally recognised that gastro-intestinal disturbance is common in atrophy, and statistics have been already given on this point, but quite a large number of cases of atrophy do develop without any gastro-intestinal disturbance. If considerable amounts of sugar are given by the mouth, alimentary disturbance (fermentative diarrhœa) is frequently set up, and the only method (except intravenous or intraperitoneal injection of glucose) of giving a considerable amount of carbohydrate to satisfy the increased demand is to use a less easily fermentable sugar, such as dextrimaltose. It is highly probable that even in the normal child a certain amount of sugar is split up by bacterial activity; in children with nutritional disorders, however, the work of Bessau and Bossert[18] shows that an invasion of the upper intestinal tract by *Bacillus coli* definitely occurs. Metabolism absorption experiments therefore will not yield results comparable with the results obtained with fat, but if Fleming's view be correct one would expect to find an appreciable quantity of sugar in the stools in cases not complicated by diarrhœa. Utheim[8] examined seven athreptic infants, five of them over five day periods, and found that the sugar output was very small in all cases, not exceeding 1 per cent. of the intake, regardless of the consistency of the stools. It is worth noting that one of the infants was fed on a food containing 12·4 per cent. of sugar. She also quotes some findings by Usuki, who examined eight children, three of them being atrophic; the sugar output in all the cases varied between 0·1 per cent. and 1·9 per cent. of the intake, and it was not present in the atrophic infants in greater amounts than in the normal children.

These results certainly suggest very strongly that absorption of carbohydrates is not faulty; moreover, there is another and more probable explanation of the sugar starvation—namely, that absorption of carbohydrate is not abnormal in atrophy, but that there is excessive oxidation of sugar in the body and a depletion of the glycogen reserve. Certain of Fleming's results and calculations appear to me to support this view, rather than the one he enunciates.

A few metabolism experiments have been carried out on my cases. The sugar was estimated in the food and in the fæces by Schaffer and Hartman's method. The estimations were carried out over five day periods and the children were not suffering from diarrhœa. The absorption figures in all the cases (six in number) have been very high ones, the average figure being 99·79 per cent.

The results of these absorption experiments support the view that, in the absence of diarrhœa or loose stools, the digestion and absorption of carbohydrates in infantile atrophy is normal. Carbohydrate indigestion, the result of the fermentation of sugar, does, however, occur, and the stool then becomes acid, loose, and green, and may also show mucus and possibly soap curds. The child suffers from vomiting, has colic, and develops sore buttocks. If the indigestion continues, diarrhœa is likely to occur, and then fat absorption is diminished. As a result of these symptoms the already atrophic child becomes more wasted. Carbohydrate indigestion is more frequent than any other form of indigestion, and occurs particularly when the carbohydrate content of the food is high, unless the sugar given is one of the less fermentable forms—e.g., dextrimaltose. This form of indigestion is very similar to the description of Mehlnährschaden by Czerny, and to the carbohydrate atrophy of Bloch, although the carbohydrate is not usually used in this country in the excessive amounts described by these writers. The hypertrophic form of carbohydrate dystrophy is occasionally seen, and when this is the case the child has usually been fed on proprietary foods. The severe types of this form of indigestion appear to be much more rarely seen in this country than on the continent. The treatment of this form of indigestion is, essentially, the limitation of the amount of carbohydrate used, and the substitution of a less fermentable type of sugar—e.g., dextrimaltose, &c.—for that previously used. For this purpose, if the child has been fed on proprietary food it is advantageous to change to a cows' milk mixture. On rare occasions it has been found necessary to give the food without any added sugar until the symptoms have improved. If diarrhœa occurs the treatment already outlined for fat indigestion should also be carried out.

THE METABOLISM OF PROTEIN IN INFANTILE ATROPHY AND PROTEIN INDIGESTION.

I have previously referred to the fact that Biedert, in 1869, first propounded the theory of the harmfulness of protein, and this theory has been disproved by Czerny, Finkelstein, and others; indeed, the pendulum of opinion has swung to the opposite extreme, and protein has been regarded as the one factor that does not lead to infantile atrophy, and the only factor in the food which many atrophic children can adequately deal with; hence the introduction of protein milk. I have used protein milk made by Finkelstein's method, with the exception that ordinary milk has been substituted for buttermilk. I have also used protein milk made by the addition of calcium caseinate "Casec" Mead) to cows' milk. Both these methods have yielded good results in atrophy, particularly when fermentative diarrhœa was present; but it has been my experience that this method of feeding is only a temporary expedient, for after a time loss of weight occurs again, and also in not a few cases hard protein curds appear in the stools, a true protein indigestion. Possibly this failure to continue the initial improvement is due to the alteration in proportion of fat to protein in protein milk, for it has been suggested by Maignon[19] that unless fat is present in the proper proportion, protein is not economically utilised and toxic products are formed.

The well-known observations of Gowland Hopkins, McCollum, Mendel and Osborne, &c., have completely altered earlier views as to the relationship of food protein to growth and the maintenance of life. Food protein is made up of a large number of radicles of amino-acids into which it is broken down during digestion; after absorption a certain number of these are built up again in the body into tissue proteins. Since the tissue proteins do not show the same proportion of amino-acids as the food protein, a certain number of the amino-acids in the food are not utilised, and these are used largely to provide energy being broken down into urea.

The proportions of the amino-acids in different foods varies considerably, but certain of them are essential for growth; in particular lysin, cystin, and tryptophane. Metabolism "balance" experiments may show good results, the animal showing a good nitrogen absorption and retention, yet in the absence of growth amino-acids there will not be any growth. Casein is a poor growth protein because it is very deficient in cystin; lactalbumin, on the contrary, is very efficient and contains of all proteins the highest proportion of leucin, lysin, and tryptophane (Holt),[20] and sufficient cystin to meet the demands of the growing tissue (McLeod)[21]; indeed, it appears to be the most efficient in supporting growth of all the proteins studied. The intake of protein in normal breast-fed children up to 9 months of age is about 1·5 g. per kg. of body-weight (Holt). Bottle-fed children of the same age, as is well known, take much larger quantities than this, the amount being 3 to 4 g. per kg. of body-weight. The increase in protein requirement is probably due to the different amino-acid content of the two milks (Holt), for it should be remembered that whereas lactalbumin forms two-thirds of the protein in human milk, five-sixths of the protein in cows' milk is casein.

In spite of the commonly accepted view that protein can do no harm, the possibility that atrophy may be due to the absorption of unaltered or slightly altered protein has been considered by several writers. Moro[22] found precipitin to cows' milk in blood removed at autopsy from two atrophic infants; Bauer[22] in four cases. Lust[22] showed that under certain conditions the intestinal tract was permeable to egg-albumin, and that this was most frequent in marasmus (decomposition) and diarrhœa (intoxication). This subject has recently been further investigated by Anderson and Schloss[23]; they point out that to cause a specific reaction in the organism protein must be absorbed in a form unaltered or only partly altered by digestion, since protein which has been digested as far as the peptones does not cause specific immune reactions. They examined the blood of 98 marasmic infants, and found that the blood of most of these contained precipitin to cows' milk. They also found that these infants were "apt to show precipitin to cows' milk in their blood only at the time when they begin to gain in weight, and that after a period of gain the precipitin disappears." They suggest that during the period when the infant fails to gain, foreign protein may be entering the blood in sufficient amounts to cause disturbance. Precipitin may be gradually formed as a result of this, and when in sufficient amount neutralises the effect of the foreign protein, and a gain in weight results. With the improvement in the patient's condition the intestinal tract becomes impermeable to undigested or incompletely digested protein, and the precipitin disappears from the blood. They admit that the reaction may be merely indicative of the incidental entrance of foreign protein into the blood-stream owing to a temporary change in the intestine, and be of no special ætiological significance. It is interesting to note that control tests carried out by them on new-born breast-fed children were all negative.

If, as I believe, the view is correct that infantile atrophy is a disorder of metabolism, it may well be that the intestinal mucous membrane shares in the "metabolic depression," becomes more permeable, and that the digestive processes are not properly carried out. Under such conditions absorption experiments would not be of any value in an attempt to prove or disprove this theory. It will be remembered that Finkelstein claims that the whey salts render the intestinal mucous membrane more permeable to sugar and salts, but that this view has not been substantiated, nor is there any evidence of the permeability of the intestinal wall to neutral fat.

Now if digestion is impaired it must, in the absence of diarrhœa, be due to defective ferment activity. It has already been demonstrated that there is not any deficiency of pancreatic lipase, which should be the case if there is enzyme deficiency, and it is surely a reasonable assumption that the other pancreatic ferments are also normal. I have not attempted to estimate the activity of pepsin in infantile atrophy, but it has been asserted that the secretion is somewhat diminished. Gastric digestion in infants fed on cows' milk is however often poor, because, owing to the high buffer value of cows' milk, the requisite hydrogen-ion concentration for pepsin activity is only reached after a considerable period. If the requisite hydrogen-ion concentration occurs in the normal time gastric digestion also appears to be normal. I propose later in this lecture to refer to observations on gastric acidity and hydrogen-ion concentration of the gastric juice and their application to treatment. Attempts to estimate rennin have been made, but from what is said later it will be seen that it is impossible to make any dogmatic statement about this ferment.

PROTEIN ABSORPTION.

A certain number of investigations have been undertaken to determine the protein absorption. The estimation of nitrogen by the Kjeldahl method has been carried out in the moist, and not in the dried fæces, because Gamble [24] has shown that up to 20 per cent. of the nitrogen in the stool may be lost in the process of drying. The estimations have been done in 24 hours specimens of stools, and the stools have been kept in an ice-box until the estimation was started. The estimations were carried out over a period of five days. The percentage absorption of nitrogen varied from 57·7 to 85·8 per cent.; the average for six cases was 77·3 per cent. Utheim,[8] in a series of 30 cases, found the average absorption was 73·8 per cent. Our results are only few in number, and I regret that I cannot give larger numbers, but the number of observations required to get even one result is so large and the amount of time occupied so great, that it has been only possible up to the present to put on record a limited number of observations. I hope that in the future Miss Hickmans and I shall be able to record a larger number of observations, because we found, during the investigations on fat and calcium metabolism, that dogmatic statements cannot be made unless the number of observations is a large one. However, as the results obtained up to the present confirm those of Utheim, they are probably correct. The results are strictly comparable, because the methods of investigation have been the same in both cases, whereas earlier investigators appear to have made nitrogen determinations on dried fæces, and usually to have made only one determination on the whole of the fæces collected during the experiment (Utheim). Our results show that, as in fat and carbohydrate, protein absorption also is normal in infantile atrophy.

Clinically, protein indigestion occurs very rarely, much more rarely than carbohydrate or fat indigestion, and in my experience has only occurred when an excess of protein is given in the food over a considerable period; its treatment therefore consists in feeding with cows' milk modification without the further addition of protein. Citration of the milk may also be useful in this condition.

It is probably unnecessary to add that in referring to treatment of these various forms of indigestion I have assumed that breast milk is unavailable. I might perhaps also add that in my experience the best results have been obtained by simple modifications of cows' milk.

INVESTIGATION OF GASTRIC SECRETION IN ATROPHY.

During the last three years a considerable number of test-meal observations have been made in infantile atrophy and pyloric stenosis, both by the Ewald method and by the fractional test-meal method. In all, some 50 examinations have been made by the latter method. The test-meal itself has varied; in the majority of cases it has been a 2 oz. meal consisting of equal parts of milk and water; in a few cases Meyer's barley gruel test-meal has been used,[25] but recently the practice has been to give the ordinary meal which the child is taking, since that probably gives a more accurate idea of what is happening in the child's stomach than the results obtained by suddenly changing the food, although the change may be to a standard meal.

The interval between the giving of the test-meal and the previous meal is three hours. I should like to have made this a longer period, but considering that the child does not get a full feed for somewhat over six hours, I have felt that, dealing as I have been with atrophic children, it would be unwise to give a longer interval. The food has been withdrawn every half hour, since it has not been found practicable to remove the contents at 15-minute intervals. The contents have been removed with a syringe and No. 6–7 Jacques soft rubber catheter. These investigations were started to determine whether it were possible, by means of a study of gastric secretion, to define certain clinical groups of wasting babies, as, for instance, the constant association of hyperacidity with pylorospasm. It may be stated at once that no such classification of infantile atrophy is possible.

The rate of emptying varies. The average time appears to be between two and two and a half hours, but in some cases it has not been possible to recover any milk later than half an hour after feeding. Cowie and Lyon [26] found that a prolonged emptying time of the stomach occurred with an excess or a deficiency of acid; whereas Babbott and others [27] state that the greater the acidity the more rapidly the stomach empties; and Marriott and Davidson [28] found that in general in infants with a deficiency in gastric acidity, a larger amount of the feeding could be recovered two hours after a meal than in those with an acidity approximating to that of normal breast-fed infants. As a general rule, I believe that the latter two groups of observers are right, but there are many exceptions. Cowie and Lyon's observations of delayed emptying with an excess of acid may possibly have been examples of the hyperacidity which occurs in some forms of pylorospasm.

The value for free hydrochloric acid is a variable one, but in a few cases no free hydrochloric acid was present during the whole period of time during which the food remained in the stomach. This is not a new observation; thus Chievitz,[25] in a recent paper, states that in children with alimentary disturbances more than half show low or absent free hydrochloric acid, and although weights are not given, this group includes cases of dystrophia alipogenetica and amylogenetica. Marriott and Davidson agree that acidity of gastric contents of infants suffering from nutritional disturbances is distinctly lower than in normal infants. Babbott and his co-workers say that artificially-fed infants produce only a small amount of hydrochloric acid during digestion, and the amount is not sufficient to show free hydrochloric acid. This, however, is not consistent with my results, since free hydrochloric acid has been present at some time during digestion in the great majority of cases.

The action of hydrochloric acid in digestion is due chiefly to the number of free hydrogen-ions present. Rennin acts best between pH 6·3 and 6·0. Pepsin, however, requires a greater degree of acidity, and does not begin to act until pH 5·0 reaching half activity at pH 4·0, and full activity at about pH 2·5. It is therefore obvious that if there is not enough hydrochloric acid secreted to bring the stomach contents to the requisite degree of acidity, gastric digestion cannot take place. The acidity may be low, either as a result of deficient secretion or because the acid secreted is neutralised by the food. The (alkali) buffer value of the various foods given is, therefore, of considerable importance, and as previously stated, the buffer value of cows' milk is a very high one.

It is interesting to compare the amounts of decinormal hydrochloric acid which it is necessary to add to various foods to bring their acidity to pH 5·2–5·4.

	c.cm.		c.cm.
Breast milk	1·3	Almata (1 in 8)	1·0
Cows' milk (undiluted).	3·3	Humanised (Trufood, dried)	3·1
Nestlé's (1 in 8)	2·7	Allenburys No. 1.. ..	3·1
Glaxo—full cream. ..	2·8		
Glaxo—half cream ..	2·7		

It is important, therefore, to reduce the buffer value of cows' milk, particularly when it is given to infants suffering from nutritional disorders. This may be done in several ways; it can be done by diluting cows' milk, but the dilution must be considerable, a dilution of one of milk to three of water having about the same buffer value as breast milk. From the figures just given it will be seen that by drying cows' milk the buffer value is diminished. Another method is to saturate the buffer with acid. Thus Faber [29] has recently suggested the addition of hydrochloric acid to cows' milk, and Marriott has for some time used lactic acid for the same purpose, and has reported very good results with this method of feeding. Protein milk may owe much of its value to the fact that it has a low buffer value.

The results obtained by metabolism experiments justify the conclusion that digestion is normal in atrophy in the absence of diarrhœa. Now if the degree of gastric acidity is insufficient to activate pepsin and rennin, it follows that more digestion is carried out in the small intestine than in those cases in which the gastric ferments are activated. This, together with the fact that in the partial or complete absence of hydrochloric acid bacterial invasion of the duodenum is more likely to occur, may be an explanation of the onset of some cases of diarrhœa in atrophy.

I have not used Marriott's lactic acid milk in cases of infantile atrophy, but I have used hydrochloric acid in the amounts suggested by Faber and with good results. To every ounce of milk is added 2 dr. of decinormal hydrochloric acid and 2 dr. of water. The addition of this amount of acid gives approximately a pH value of 6·0; the buffer value is about that of breast milk, and therefore the demands on the child's stomach for acid is equivalent to that of breast milk. Normally, such an addition of hydrochloric acid does not produce any appreciable alteration in the taste, nor is there any curdling. It is obviously important that the acid should be added to the milk and not milk to the acid, because in the latter case curdling will immediately take place. I have found that occasionally milk is curdled with this amount of acid; this is probably due to the fact that lactic acid formation has progressed to such a degree that by the addition of more acid the acidity is raised to the point when curdling occurs. The milk should therefore be as fresh as possible. Another practical point is that curdling is often prevented if the feed when being warmed is not made too hot.

I have not used this method of feeding in children under three months, and Faber does not recommend its usage in the first six weeks of life, his main reason for this being that breast milk is fairly alkaline (pH 7·7) until about the tenth day. I have made use of the method when children were not progressing on ordinary cows' milk mixture, and it appears to me to be a valuable addition to our methods of feeding. It is, however, somewhat difficult to order decinormal hydrochloric acid for out-patients, although the dilute hydrochloric acid of the British Pharmacopœia is decinormal acid, and I am now trying in some cases the effect of using citric acid to neutralise some of the buffer. Citric acid is easier to obtain than decinormal hydrochloric acid. The amount of citric acid which has to be added to cows' milk to bring it to the buffer value of breast milk is half a grain to the ounce of milk. Marriott and Davidson [28] state that citric acid produces diarrhœa, but in the amounts I use I have not found this to be the case. They also object to hydrochloric acid, that this acid is not destroyed in the body, and must be eliminated, thus throwing rather a severe strain on the acid-base regulating mechanism, which may lead to acidosis. This objection receives considerable support from the work of Shohl and Sato.[36] The clinical fact remains, however, that, using hydrochloric acid in the amounts stated above, gains occur and the children do well. In one case, in which the chlorides were estimated in the urine, the amount excreted was not more than the average of 10 atrophic cases fed by other methods. This case also showed a very high percentage of absorption of fat.

The estimation of rennin has been carried out in most of these cases; the method used has been that devised by Miller and Wilcox.[30] I have, however, come to the conclusion that this method does not furnish accurate results in fractional test-meal methods. There are two sources of error, first in the earlier readings the pH value of the stomach contents may not be low enough to activate the rennin, and secondly in cases where there is hyperacidity, as in pyloric stenosis or some cases of pylorospasm, the acid itself may be responsible for coagulating the milk. The controversy as to the identity or non-identity of rennin with pepsin still continues, but the evidence appears to me greatly to favour the view that they are two distinct enzymes. The only group of cases in which the fractional test-meal method gives anything like a real diagnostic help is in pyloric stenosis, in which case there is usually milk-clot and mucin present in the resting juice, often in considerable quantity, and the resting juice shows high total and high free acidity. The emptying time is prolonged occasionally up to five hours; bile has never been found, but there is frequently a considerable excess of mucin, usually high free and total acidity, and there is absence of duodenal regurgitation as shown by estimation of total and mineral chlorides by Volhard's method.

GENERAL METABOLISM IN ATROPHY.

If it be true that, in general, digestion and absorption of food is normal in infantile atrophy, we must look for an explanation of the disorder in the internal metabolism of the body. I regret that I have few observations of my own to submit in proof of the occurrence of a disorder of metabolism. The cases showing a negative and a low calcium balance are, however, evidence in support of this view. This theory receives strong support from the observations of Utheim[8] who found a negative nitrogen balance in 7 out of 18 athreptic infants. Nitrogen absorption was normal, and the negative balance could therefore only be due either to a deficient utilisation of nitrogen or to actual destruction of the body tissues. She found in the urine certain organic acids excreted in excess of the normal, and these acids she regards as products of intermediate metabolism which would normally have broken down in the body. Corresponding with the negative nitrogen balance there was usually a negative or low salt balance. She also repeated and confirmed Freund's observations, that when benzol is given by the mouth to athreptic children less phenol is excreted in the urine than when given to normal children. The conversion of benzol to phenol is an oxidation process, and the differences in the amounts excreted between atrophic and normal children are not due to differences in the absorption from the alimentary tract.

A negative salt balance has also been found by earlier workers, but the strongest evidence in favour of this conception of atrophy is, I think, the work done by two independent investigators, Fleming[16] and Talbot,[31] on metabolism in infantile atrophy. The first of these investigators showed that the greater the degree of wasting the higher the heat output (obtained by indirect calorimetry) per kg. of body-weight—or, in other words, that the basal metabolism of wasted infants is higher than normal infants, and the greater the degree of wasting the higher the basal metabolism. If, however, the heat output per kg. of expected body-weight be considered, it is found that when the wasting has reached a certain degree (a loss of 35 per cent. of the expected body-weight) the greater the emaciation the lower is the heat output. Fleming thinks that it is justifiable to assume from these results that the early loss of weight is due to wastage of fats (or other metabolically inactive tissue), but that when 35 per cent. of the weight has been lost, wasting of the muscular or active metabolic tissues, on which the heat output depends, occurs, and hence the caloric output per kg. of expected weight decreases. There thus appears to be definite evidence of inefficient metabolism, to use his own words, "in atrophy the metabolism is carried on less economically than in health." The results obtained by estimation of the respiratory quotient showed that the tissues of atrophic children were well able to utilise both fats and carbohydrates. Fleming also accepts the view that there is not any evidence of faulty protein metabolism, but I have already quoted what appears to be very reliable evidence to the contrary.

Talbot's investigations confirm and extend Fleming's observations, for he finds that the metabolism becomes abnormal when the infant is 20 per cent. or more below the average weight. Further, he thinks his results show that in atrophy a heat production greater than the normal is necessary to maintain body temperature, because of the relatively increased amount of body surface and the absence of a protective (Lusk) or insulating (Fleming) covering of subcutaneous fat; also, that it is reasonable to conclude that as long as the body is able it will respond to the demand and produce extra heat, but that if the indigestion, which in his opinion is primarily responsible for the malnutrition is not cured, the heat loss eventually will exceed production and a subnormal temperature result. The occurrence of a subnormal temperature, the abnormal sensitiveness of atrophic children to cold, and the necessity of supplying them with artificial warmth are familiar clinical facts.

Clinical verification of the experimental finding that the basal metabolism per kg. of body-weight is higher in infants with severe malnutrition than in normal infants can be obtained by working out the caloric intake of atrophic infants who are improving under treatment. In a considerable number of cases I have worked out the number of calories which have had to be given daily to secure a satisfactory increase in body-weight; I have only on rare occasions based a diet on what I calculated to be caloric requirements. In an unselected series of 40 cases I found that the number of calories per pound of body-weight required is 68, or 149 per kg. of body-weight, the range of calories in the series being 58 per pound (127 per kg.) to 85 per pound (178 per kg.). The highest caloric value diet that I have given has worked out at 108 per pound (237 per kg.) of body-weight, on which the infant did well.

Statements concerning the number of calories required by the normal child in the first few months of life vary according to the authority consulted. Marfan[32] gives 38·6 calories per pound (85 per kg.), which is very far below the figure I have given for atrophic cases. John Thomson[33] quotes Dennett's figures—viz., 50–55 calories per pound (110–121 calories per kg.) for average infants under 4 months and moderately thin infants of any age, and 40–45 per pound (88–99 per kg.) for fat infants over 4 months. According to Morse and Talbot,[34] the normal infant has a basal metabolism of 23–30 calories per pound (50–65 per kg.), and this may be increased from 40 per cent. (i.e., 32 calories) to 100 per cent. (i.e., 46–60 calories per pound) in the change from complete muscular repose to active exercise.

The usual method of feeding in this country has been to feed by weight, for instance, to give to a child 5 months old, having the weight of a normal child of two months, the diet for a child 2 months old. The results of estimating the caloric value of the diets necessary to gain weight, however, shows that the rule should be rather to feed by age—i.e., by expected weight, than to feed by weight. The same end is obtained by certain French pædiatrists—e.g., Variot—who feeds by length and not by weight, and also by von Pirquet's "nem" system. A "nem" is the food value of 1 g. of standard breast milk, and to arrive at the number of "nem" required by an infant the following formulæ are used. At birth 0·5si^2, from the second to the sixth month 0·6si^2, and at the seventh month 0·7si^2, where "si" is the sitting height of the child in centimetres.

Although high caloric feeding appears to be essential to success in treatment, many children, when first coming under observation, are unwilling to take enough food to make high caloric feeding possible. It is a common experience to find that for some time after treatment has been started atrophic children do not show an increase in weight, and, indeed, they may even lose weight. These occurrences may be due to a diet of too low a caloric value, for the reason just mentioned; or they may be due to the possibility that this time represents the "period of repair" to which Marriott refers and during which period, he considers, that there is an effort on the part of the organism to restore the blood volume to normal.

In cases that recover, the recovery is complete and there are no after-effects. A number of cases have recently been examined after an interval of one or two years since their discharge from hospital. These children appear to be normal in every way, except that a few show clinical evidence of mild rickets. In a few cases also on X ray examination there was radiographic evidence of rickets. The only case of severe rickets occurred in a case of pyloric stenosis which had been cured by operation.

After this consideration of the views put forward by workers on this subject, the evidence on which these views are founded and my own results, I would submit that it has been demonstrated that infantile atrophy is not a gastro-intestinal disorder, but that in the present state of our knowledge it should be regarded as a disorder of metabolism, and also that there is a great deal of evidence in favour of the view originally put forward by early English writers on this subject, and now strongly held by Marriott, that the condition is essentially due to starvation. The marasmic condition of infants with pyloric stenosis is obviously due to partial starvation, and all the observations that have been made on their metabolism after Rammstedt's operation and when fed on small feeds show that it is identical with that of infant atrophy.

SUMMARY.

The theory and facts of infantile atrophy that I have attempted to bring to your notice may be shortly summarised. An infant after thriving normally commences to lose weight for one or more causes, such as:—

1. Insufficient food. Either an insufficient supply or because some condition like pyloric stenosis prevents the child from obtaining a normal supply.
2. Unsuitable food. All artificial foods; deficiency in fat or protein; excess of carbohydrates; excess of fat; absence of vitamins, &c.
3. Diarrhœa and vomiting.
4. The occurrence of some infection—e.g., pyelitis, pneumonia.

The conditions described under the last two headings may be cured when the child comes under observation for atrophy.

5. Hygienic surroundings.
6. Pre-natal influences and constitutional causes.

These factors are very real ones and of great importance.

Weight is lost at the expense of the metabolically inactive tissues and water until the child is 20 per cent. under the expected weight for its age. From this point onwards the child becomes an atrophic infant, and is unable to utilise its food properly. The basal metabolism is increased and continues to increase with increasing emaciation; hence high caloric feeding is essential. Absorption from the intestinal tract, except under certain conditions, such as diarrhœa and some forms of fat, carbohydrate and protein indigestion, is essentially normal. It is difficult rigidly to separate the consideration of the various food factors because of their great degree of interdependence—e.g., fats and calcium, fats and carbohydrates; similarly there is difficulty in separating cases into clearly-cut clinical syndromes of fat, carbohydrate, and protein indigestion. The respiratory quotient shows that fats and carbohydrates can be utilised if absorbed; indeed, there appears to be a real sugar hunger. The limit to the intake of sugar is fermentation and the production of diarrhœa; this is a much more frequent occurrence in artificially fed than in breast-fed babies, due possibly to invasion of the upper parts of the small intestine with *B. coli*. When diarrhœa occurs carbohydrate is not absorbed well and weight is lost. In the absence of diarrhœa, therefore, considerable quantities of carbohydrates can be absorbed, and to obtain this end—i.e., freedom from diarrhœa—a less fermentable sugar, such as dextrimaltose, is used.

Many of these children can and do absorb a larger amount of fat per kg. of body-weight than normal children usually do, but a high fat dietary may cause fat indigestion, and in diarrhœa, however produced, there is diminished fat absorption. Calcium absorption is usually very good if a sufficient supply of fat and calcium is present in the food; indeed, many absorb more calcium per kg. of body-weight than normal children usually do; but in a poor fat or calcium dietary the absorption is not good. There is, however, in many cases faulty salt metabolism, which may result in low retention values for calcium. Protein metabolism is also faulty. The absorption of protein is normal: protein indigestion is a rare condition and has only been seen where there has been a large protein intake over a considerable period. The metabolic disturbance is essentially an abnormal salt and protein metabolism, resulting in poor retention values for mineral salts and nitrogen.

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THE RAPID CONTROL OF DIPHTHERIA OUTBREAKS IN INSTITUTIONS.

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AND

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(*From the Wellcome Physiological Research Laboratories.*)

IT would appear at first sight that testing by the Schick method and active immunisation against diphtheria can be usefully employed only during the inter-epidemic periods, but are of little value in dealing with an active epidemic. These newer methods of prophylaxis are, however, of great value in the control of epidemics, at least in camps, schools, hospitals, or similar institutions where the population is under control. The customary method of handling such epidemics is to swab the throats and perhaps the noses of all the subjects and to give antitoxin to those who have been in contact with "cases" or with known carriers; it is, however, difficult to know how close has been the contact between given individuals.

It is important to remember that, from the point of view of their immunity and infectiousness, six types of subject may be met with. We may divide a population into two groups, "Schick positive reactors" and "Schick negative reactors." We may further divide each group into those with "negative" swabs and those with "positive" swabs, the latter being again divided into those yielding virulent and those with avirulent diphtheria bacilli. These six types may be set out thus:—

A. Schick positive, swab negative.
B. ,, ,, ,, positive, bacilli avirulent.
C. ,, ,, ,, ,, ,, virulent.
D. ,, negative ,, negative.
E. ,, ,, ,, positive, bacilli avirulent.
F. ,, ,, ,, ,, ,, virulent.

The usual method of dealing with a population infected with diphtheria depends upon the bacteriological findings alone, those with "negative swabs" remaining free, while those yielding "positive swabs" are isolated. The isolation ward would then contain classes B, C, E, F. Class C are obviously those incubating diphtheria, and such subjects will, within a day or two, develop clinical diphtheria. These are rightly present in the isolation ward. Class E are not susceptible to diphtheria and are of no further interest; since their bacilli are avirulent it matters not whether people in this class are free or isolated. But the juxtaposition of F, the non-susceptible carriers of virulent bacilli, and B, the susceptible subjects, involves danger. If amongst F there exist "profuse carriers" the danger to class B is acute.

We recently had occasion to examine a small ward in which were isolated patients whose swabs had previously been diagnosed "positive." We found, amongst nine patients, representatives of classes B, E, and F. A smear made from an overnight culture of one of the patients resembled that from a clinical case of diphtheria, showing practically nothing but bacilli morphologically resembling Klebs-Löffler bacilli; the bacilli proved virulent. The girl gave a "negative response" to the Schick test. She clearly belonged to class F and was a "profuse virulent carrier," and, one must assume, a source of acute danger to people in class B, who are susceptible to diphtheria.

It may be objected that all in the isolation ward would receive protection from an injection of diphtheria antitoxin. The disadvantage of this procedure is that the protection rapidly disappears, and in a few weeks the susceptible people are again exposed to danger. We have had under observation during the past year and a half an institution in which prophylactic injections of antitoxin were given to all the inmates. The epidemic at once ceased, but about a month later cases of diphtheria began to recur; injections were again given, but sporadic cases occurred for many months. Our advice was then asked. Since the children were all very young and one might get Schick negative reactions due only to passive immunity derived from the mother, we urged active immunisation with toxin-antitoxin mixtures. This has been done and the children are now immune.

Precautions against Danger of Mixing Virulent Carriers and Susceptible Patients.

In order to avoid the danger of mixing classes F and B, the "virulent carrier" and the susceptible patient, we would recommend, as the result of our experience in a recent hospital epidemic, the following procedure. When an outbreak has occurred, test every inmate at once by the Schick method and swab throat and nose. Within 24 hours the results of the Schick test can be read with 90 or 95 per cent. accuracy (and a day or two later with practically 100 per cent. accuracy). The results obtained from the Löffler culture made from the swab are also known within 24 hours. The object of the common procedure of swabbing is to detect the dangerous "carrier." We can, however, do this by the use of the Schick test alone with fair certainty, by isolating at once all those in classes E and F, while those "Schick positive" and "swab positive" can, with little danger, remain free but subject to inspection twice daily for a day or two. At this inspection any person incubating diphtheria (in the rare instances where a representative of class C is present) is detected at the earliest onset of illness with sore-throat, and is given antitoxin immediately. Within two to seven days the results of the "virulence test" of cultures from classes E and F will be known and E may be released. There will remain group F, the dangerous carriers. The further treatment of these people is a problem of administrative difficulty and can apparently be met only by isolation until a succession of "negative swabs" can be obtained. In a group of 11 boys we have recently examined, eight yielded successive negative swabs after an average of four weeks' isolation. It is necessary to relieve pathological conditions of nose and throat and remove tonsils if the infection persists in them. Obstinately persistent virulent carriers are met with occasionally; the community has not yet discovered what is to be done with such people, but at all events they will, by the procedure above described, be removed from their companions in the institution.

Rapid Establishment of Control.

The method outlined above calls for a moderate amount of immediate work, which is well repaid by the rapid attainment of control. One may, if necessary, reduce the immediate work by postponing the swabbing. The Schick test can, if discipline and organisation are good, be done rapidly; we recently found that a pair of operators could do the intracutaneous injections for 286 patients in 68 minutes. The Schick test results will enable one next day to isolate all Schick negative subjects; these can be swabbed as soon as time permits and those with a "negative swab" released, while cultures from the "positive swab" patients are tested for virulence. Those with avirulent bacilli are at once released and the dangerous F group retained.

With regard to the Schick positive "reactors" if they are to remain in the institution for many weeks one proceeds at once to immunise them. It has been our experience during the past year that three injections of toxin-antitoxin mixture given at weekly intervals cause from 50 to 80 per cent. of the people to become Schick negative reactors within two weeks of the last injection, and upwards of 80 or 90 per cent. within four or six weeks of the last injection.

Basis of Effective Control.

It will be seen that the plan advocated here depends upon the truth of the following "propositions": (1) Schick negative reactors are not susceptible to diphtheria. (2) Schick positive reactors are susceptible to diphtheria. (3) Schick positive reactors never harbour virulent bacilli detectable by ordinary swab-culture methods unless they are suffering from or are incubating diphtheria. (4) Carriers of virulent bacilli are immune and are always negative Schick reactors. (5) "Avirulent" bacilli do not cause diphtheria, and therefore "avirulent carriers" are of no importance to the public health authority. (6) One efficient swabbing of a population gives a sufficient working knowledge of the location of infection—i.e., all "profuse," and therefore dangerous, carriers will be detected.

We are fully aware that the truth of these "propositions" may be contested. It is, however, sufficient for effective control if they approximate to truth, and we think the available experience of other workers and our own results indicate that these propositions represent a very close approximation to truth. We would maintain with confidence that by the application of the measures suggested one can, within 24 hours, obtain effective control of an outbreak of diphtheria in any institution where efficient isolation can be ensured. We hope the method will be thoroughly tested.

Summary.

In an outbreak of diphtheria:—

1. Schick test all patients.
2. If possible swab all patients, throat and nose.
3. Next day, isolate in one ward all "Schick negative" patients.
4. For a few days, see twice daily all "Schick positive" reactors.
5. Test for virulence all positive swabs from "Schick negative" reactors; release "avirulent" but rigidly isolate all "virulent carriers."
6. Commence at once to inject toxin-antitoxin mixtures into all "Schick positive reactors."

Note.—Since writing this paper our attention has been called to the valuable study by E. H. R. Harries on the Carrier of Diphtheria Bacilli from the Fever Hospital Standpoint in the *Medical Officer*, March 4th, 1922, where a similar method was suggested. "On the occurrence of clinical diphtheria in a scarlet fever ward, it is not a difficult matter to Schick test the remainder of the ward, and so separate the susceptible from the non-susceptible cases. Susceptible cases can be placed apart and if necessary be passively immunised by antitoxin." We hope that Dr. Harries will soon publish his further experience with the method.

Clinical and Laboratory Notes.

TEMPORARY COLOUR-BLINDNESS.

BY F. W. EDRIDGE-GREEN, C.B.E., M.D. DURH.,
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SPECIAL EXAMINER AND ADVISER TO THE BOARD OF TRADE ON
COLOUR-VISION AND EYESIGHT.

THOUGH congenital colour-blindness has chiefly occupied the attention of those who have paid attention to the subject, it is well known that colour-blindness may be acquired through disease or injury. These cases have been regarded as permanent. It is, however, not known that colour-blindness similar in character to a very bad dichromic may occur as a purely temporary condition.

The colour sense, even with normal-sighted persons, varies according to the condition of the health. When a series of colour equations have been made by three normal-sighted persons it will be found that on certain days one of the three will put more or less green in the equation than on the previous occasion, whilst the other two observers will make the same equation as before. This condition, whilst a disturbing factor, usually varies within the limits of normal colour-vision. The nerve cells whose function it is to perceive colour seem to be much more liable to affection by disease, especially by toxic influences, than those of the visual centre. Acquired colour-blindness seems to be closely related in its general characters to the congenital form. A man suffering from general paralysis of the insane may pass through all the degrees of congenital colour-blindness. A woman became totally colour-blind after ear disease; she was examined when she was regaining a certain amount of colour perception and could distinguish between red and violet, the rest of the spectrum appearing grey. A signalman became totally colour-blind after tetanus, his visual acuity being partly 6/6; he had previously passed the wool test several times.

The following is an illustrative case. The examinee was a man who had just recovered from influenza, but he appeared perfectly well and made no complaint of any kind. His form vision was 5/5 partly, both eyes being used. Examined with the lantern he called green both white and red; red he called white, and white red.

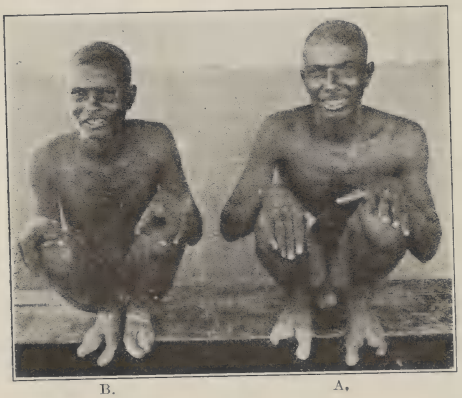
Examined with the spectrum he called the region from λ 650μμ–λ 571μμ (red, orange, yellow, and yellow-green) red; the region from λ 571μμ to λ 538μμ (green) white; the region from λ 538μμ to λ 442μμ (green, blue, and violet) blue; and purple from λ 442μμ to the end. The apex of his luminosity curve was at the normal point λ 585μμ. He made the following equations: 45 red λ 665μμ mixed with 2 of green λ 520μμ matched 15 white. The normal equation is 45 red with 13 green equals 16 white, so that he was matching a bright red with white. He made an equation of 10 λ 633μμ red with 6 λ 540μμ green equals 22 white. He also agreed with the normal equation which is 10 red and 10 green equals 20 white, but required the comparison white light increased in luminosity. Examined again five months afterwards his colour-vision was normal in every respect.

TWO CASES OF CONGENITAL DEFORMITIES OF THE HANDS AND FEET.

By NORMAN F. SMITH, M.B., B.CH. OXF.,
MEDICAL INSPECTOR, SUDAN GOVERNMENT.

THE two men depicted in the illustration are brothers from a village near Luxor who passed through quarantine at Wadi Halfa on their way to work on the cotton plantations in the Southern Sudan.

History.—A. is aged 20, B. 18 years. There are two elder sisters and two younger sisters and one younger brother. No other members of the family are known to suffer from any deformity. The condition is attributed by the natives to the fact that during these two pregnancies their mother developed a craving to behold geese, which she apparently satisfied to the full. They call the condition "goose-foot."



Sudanese brothers, aged 18 and 20 years, with congenital deformities of hands and feet.

Present Condition.—Both men, with the exception of their fingers and toes, are well developed and of normal intelligence, showing no signs of disease. My own camera being out of action, I sent for the local native photographer; unfortunately the "close-up" photograph of the hands were failures. Also I had no X rays at my disposal.

The detailed description of the conditions is as follows:—

CASE A.—Left hand: normal.

Right hand: Thumb webbed and stunted, hand otherwise normal.

Left foot: "Cloven." Big toe normal; second and third toes not represented beyond metatarsals. A median cleft runs proximally the whole thickness of the foot to the fibular side of the ball of the big toe. Fourth toe not represented. No metatarsal. Fifth toe acutely flexed. Otherwise normal.

Right foot: "Cloven." Big toe normal; second and third toes not represented beyond metatarsals. Fourth and fifth toes syndactyly. Two nails.

CASE B.—Left hand: Thumb diminutive, otherwise normal. Index finger, two sets of phalanges, (*a*) diminutive and springing from first metacarpal, (*b*) normal in size, but bent by webbing to meet (*a*) at base of one large nail. Middle finger represented by a soft pad over head of third metacarpal bone from which runs obliquely a phalangeal bone to join the first interphalangeal joint of the ring finger. Ring finger normal. Little finger normal.

Right hand: Thumb and index finger syndactyly. The first and second metacarpals run side by side. The two second phalanges are fused into a triangular plate bearing two equal nails. There is no joint between the first phalanges and this plate. Middle finger completely flexed by webbing. No sign of nail formation. Ring finger normal. Little finger normal.

Left foot: "Cloven." Big toe valgus, otherwise normal. Second and third toes not represented; no metatarsals; cleft as in A. Fourth and fifth toes, complete syndactyly. Two well-formed nails.

Right foot: "Cloven." Big toe normal. Second and third toes not represented; no metatarsals. Fourth toe, metatarsal fused with fifth, a diminutive toe.

The points of especial interest would seem to be: (1) The variety of deformities found in each case; (2) the entire lack of symmetry; (3) the absence of family history; (4) the comparative rarity of survival to adult life of persons suffering from congenital deformities amongst semi-civilised peoples; (5) the attributed "exciting cause."

RHINOSPORIDIUM SEEBERI (KINEALYI) IN A MALABAR WOMAN.

BY T. S. TIRUMURTI, M.B., C.M. MADRAS,
L.T.M. & H. LOND.,
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IN a paper on *Rhinosporidium Kinealyi*, by Major R. E. Wright and myself, read at the Indian Science Congress held at Madras in January, 1922, it was pointed out that no case of infection of woman by the parasite had been observed by us or recorded in the literature. It was our opinion that women were susceptible to infection and that such cases were being missed or overlooked. In October, 1922, Major G. Pandalai, I.M.S., consulted me about a Malabar woman who had a recurring nasal polypus, and I am indebted to him for the following history of the disease in this patient. The history is interesting also for the facts that the nasal growth had recurred for the eighth time and that the disease lasted for nearly 20 years.

The case is that of a married woman, aged 34, with healthy children, who have no nasal polypi. She began 20 years ago to have nasal obstruction. There is deformity of the bridge of the nose. The nasal polypus was removed by forceps for the first time in 1904, and the recurring growths subsequently in 1908, 1910, 1914, and 1916. In 1918 the growth reappeared and was taken out by forceps; the base of the growth was cauterised and part of the middle turbinal removed. The growth, however, recurred and was removed in 1921 by forceps. On none of these occasions was the growth sent up for microscopical examination. In October, 1922, the polypus was observed to reappear in the nose and Major Pandalai snipped off a piece for microscopical examination which confirmed its rhinosporidial character. At my suggestion a 2 per cent. watery solution of tartar emetic locally is being tried. I heard that the patient had some relief in the nasal obstruction. A cure by tartar emetic local application is not claimed, as the patient is still under observation.

I am confident that, if a systematic microscopical examination of all nasal polypi removed by operation at the various hospitals in the Madras Presidency were conducted, many cases of the parasitic infection in women would be brought to light.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF NEUROLOGY.

The Value of X Rays in Cerebral and Spinal Localisation.

A meeting of this section was held on April 10th, Dr. Wilfred Harris being in the chair, when the discussion took place on the value of X rays in the localisation of cerebral and spinal tumours, with special reference to ventriculography and lipiodol injections.

Mr. **Percy Sargent**, in opening the debate, said that last year he saw Prof. J. Sicard at work in Paris on cases in which radiography was carried out after the injection into the spinal theca of a substance which was opaque to X rays. He was greatly impressed by the possibilities of the method, and had used it on a number of occasions. The substance was an oily preparation obtained from the seeds of the black poppy and was impregnated with 40 per cent. iodine. That no ill-results had been recorded from its use was probably attributable to the extreme slowness with which the iodine was absorbed; indeed it was not known how long the lipiodol would remain in the tissues, but it was certainly longer than three months. The injection was done with the patient seated in a wheel-chair, and as soon as it was finished he was wheeled to the X ray room. The head of the patient was slightly inclined forwards, and an ordinary lumbar puncture needle introduced into the mid-line between the atlas and the occipital bone. When the atlanto-occipital ligament had been pierced, there was a 1 cm. space before the cord was encountered, therefore careful manipulation should prevent the cord being wounded. An empty needle was inserted, and a little cerebro-spinal fluid withdrawn, and then 1 to 2 c.cm. of lipiodol injected, and, with a second syringe, a few c.cm. of normal saline, the latter for the prevention of staining of the tissues on withdrawal of the needle. By the time the patient reached the X ray room the lipiodol had fallen to the bottom of the theca, where it was usually seen as a cone-shaped or a rounded mass if no block existed. Where a complete block was present, the lipiodol was arrested at that point. He showed a skiagram of a case of extra-thecal sarcoma, in which symptoms had existed about ten weeks. The signs of pressure were severe, but not complete, and the actual level varied somewhat and was not very clearly cut. Injection of lipiodol into the theca showed the exact situation of the upper limit of the block, and this was verified at operation. Another case portrayed was that of a neuro-fibroma situated on one of the roots inside the spinal theca; the neurological signs corresponded. At operation he found that the curved line in the skiagram represented the upper surface of the tumour, and the method not only confirmed the neurologist's opinion, but showed that the tumour could be removed through a comparatively small opening, nothing in the way of exploration being required. To determine upper and lower limits of the block two injections should be done, one with the patient tied to the table and inverted on it.

As extra-medullary tumours were usually small, and intra-medullary tumours might extend over many segments of the cord, this technique possibly presented a help towards the differentiation of intra-medullary from extra-medullary tumours. He had also used the method satisfactorily in a case of meningitis circumscripta, of which the skiagrams were exhibited. He had also found the method valuable in cases in which the neurological signs as to the upper limit of the lesion were variable or equivocal. One instructive case was that of a man, aged 38, who for more than two years had had a fixed pain at the level of the ninth thoracic root, with disturbances of micturition, weakness of legs, and defective sensibility of certain segments. The symptoms varied not only from day to day, but almost hourly. Injections of lipiodol on three occasions, the second at 54 hours and the third at 120 hours, determined the site, and laminectomy revealed a condition in which there were large angiomatous vessels, giving an appearance similar to cirsoid aneurysm, this providing the key to the variability of the symptoms. Mr. Sargent had also used it in two cases of spinal caries with a partial compression paraplegia, and each showed a long persistent streak of lipiodol along one aspect of the cord. As neither had yet been operated upon, he was unable to give any explanation of the appearance. Summarising, he said that in this method the profession possessed an aid to diagnosis which was of considerable value. It enabled one to ascertain whether or not there was a block in the spinal theca, and to know whether a block was complete or only partial; and in the latter one derived a good indication for operative attack. By it, also, one could distinguish between meningitis and other conditions, and between intra- and extra-medullary tumours. In addition, it gave evidence of the exact relations of the tumour to the bones, and enabled the surgeon to approach the lesion with greater precision and through a smaller wound than formerly.

Mr. **Geoffrey Jefferson** devoted his attention to the radiographic diagnosis of pathological conditions within the skull, and particularly to the localisation of cerebral tumours, and the advantages which seemed to accrue from the injection of air itself. He first showed skiagrams of skulls of cases which during life had sustained great increase in intracranial tension; in some there was a curious sand-rippling appearance in the frontal region, and the pituitary body was compressed. In a case of hydrocephalus the diaphragma cellæ was widely opened. In some similar cases there were a number of small herniations and a disappearance of the posterior clinoid processes. He advocated the routine taking of stereoscopic skiagrams, and keeping a watch for all possible points of bone erosion, especially round about the middle fossa and the lesser wings of the sphenoid. One might then gain valuable information in the localisation of basal endotheliomata, as these caused proliferation of overlying bone. Speaking of ventriculography, he said it was, especially in this country, still very much in the balance. It was largely accepted, and was being used increasingly in the United States. The chief trouble was that which followed on its advocates having claimed more for the method than the cases seemed to justify. The speaker had made 13 air injections on ten patients, and as a result he felt more favourably disposed to the method than he was at first. If the appropriate diaphragm was used, good results should be obtainable with small quantities of air injected and the invariable use of stereoscopic skiagraphy. No doubt ventriculography had a definite mortality; two of his own ten cases had died. One was a child with hydrocephalus, and it died three days after replacement of 80 c.cm. of cerebro-spinal fluid by air. Possibly the child might have died after a puncture of any kind, but the death should be attributed to the particular procedure. In the other fatal case he had tried bilateral occipital puncture in a case in which a cerebral tumour could not be localised, and he failed to strike the fluid with either of his tappings, and the woman died a week later. No post-mortem was allowed. He entertained considerable hopes from the method following upon experience and improved technique, for several points had not yet been settled. One concerned the amount of air which should be injected. Should one be satisfied with extracting 20 to 30 c.cm. of cerebro-spinal fluid? He had been disappointed by the results when using only 25 c.cm. of air.

Discussion.

Sir **James Purves Stewart** said he considered that the injection of air into the spinal theca was of diagnostic value, and he showed a number of skiagrams of cases in which he had carried it out. It was especially useful in regions where diagnosis with exactitude was notoriously difficult. In some cases he got a definite picture from the injection of 70 c.cm. of air 5 c.cm. at a time. Precision was greatly helped by this method in supra-tentorial tumours. He also showed a number of X ray plates derived after injection of lipiodol, and remarked on the importance of having the patient's head in the right position when carrying out the injection.

Mr. A. A. McCONNELL also showed a number of skiagrams of his cases in which he had injected lipiodol. One was that in which it could not be determined whether the patient had a frontal tumour or a posterior fossa tumour. An X ray diagnosis was made following ventriculography, and after death a glioma of the frontal lobe was found, which bulged into the anterior horn. Two of the ten patients on whom he did the successful introduction of air died, one eight hours after the injection, the other 14 hours after, and both died in the same way—i.e., suddenly, as if they had been shot. Both had posterior fossa tumours and gross deformity of the medulla. It was questionable whether those fatalities were definitely due to the air injection, as sudden death was not uncommon in such cases; still, it was safer to blame the method, and study how they could be avoided in the future. He regarded as the most important item in the technique the avoidance of any sudden change in the intracranial pressure from the injection of air, and that could be ensured by the slow withdrawal of only small quantities of fluid at a time, not more than 5 c.cm., the blood pressure being taken as the criterion of the intracranial pressure. In cases of internal hydrocephalus the occipital route was the easiest by which to reach the ventricle, but when the ventricle was small or normal the lateral method was best. Injection into the lumbar region gave him less information than direct injection into the ventricle did. The injection of 25 c.cm. of air should cause the condition to show up well. He referred to the fact that there was still a good deal of uncertainty in the interpretation of radiograms, even of the stomach, and considered that a careful use and study of this method would result in deriving much help from it.

The CHAIRMAN said that ventriculography seemed to him to be a dangerous procedure, and that it should not be done unless grave reason could be shown for it. The use of lipiodol in the way described seemed to be much less dangerous, and the advantages appeared so obvious from Mr. Sargent's slides that it was probably a justifiable procedure.

Mr. L. B. RAWLING said he felt that lipiodol was a substance which should be tried; it appeared to be devoid of danger, and in some cases gave quite good results. He shared Dr. Wilfred Harris's views on ventriculography; it did not promise much advantage, and seemed to present considerable risks.

Dr. C. P. SYMONDS said that the absence of a high protein content in the cerebro-spinal fluid obtained from lumbar puncture did not absolutely exclude the presence of a compression lesion of the spinal cord. A recent case he had was that of woman who for some time had a transverse lesion of the spinal cord. She had been under his care before, when the fluid from lumbar puncture had a normal protein content. On this later occasion it contained 0·2 per cent. protein, and on injecting lipiodol it was completely arrested at the fourth dorsal level. Operation was done and an extra-dural lipoma was removed. An interesting point was as to which method of inquiry was likely to give the first evidence of subarachnoid blockings, lipiodol injections or estimations of the protein content of the cerebro-spinal fluid.

A number of questions were asked, and the openers briefly replied.

SECTION OF ORTHOPÆDIC SURGERY.

DISCUSSION ON TUBERCULOUS DISEASE OF THE HIP-JOINT.

A MEETING of this section was held on April 1st, with Mr. R. C. ELMSLIE, the President, in the chair, when a discussion was held upon the Treatment and Functional Results of Tuberculous Disease of the Hip-joint.

Urgency of Early Treatment.

Mr. W. T. G. PUGH, who opened the discussion, said that it was now almost unnecessary to emphasise the extreme importance of heliotherapy (or artificial light treatment during the winter months), for the great value of this form of treatment was now widely recognised. Yet the urgency of the need for early treatment in the country of tuberculosis of bones and joints had not yet been fully impressed upon the profession, and the earlier diagnosis which undoubtedly obtained now was not always followed by early treatment upon the best possible lines. Less than one-fifth of the cases admitted to Carshalton came during the first three months of the disease. According to accepted pathology, the tuberculous process began in the red marrow of the head of the femur and was for a variable time confined to the bone. Though certain sympathetic changes took place in the joint during this stage these were capable of complete resolution. If, however, the tuberculous focus were allowed to find a way into the joint, as it generally did within three months, permanent damage to the joint was inevitable. Cases were cited and photographs exhibited to illustrate the almost perfect functional results with a mobile joint which had been obtained when the correct treatment was instituted during the first stage; these were contrasted with the results of treatment begun after this stage had passed. A possible objection that there was no definite proof that the first series of cases was truly tuberculous could only be met by the reply that such happy results could only be obtained when the treatment was instituted at such an early stage that the diagnosis rested upon the symptoms and the interpretation of the X ray plate; the classical signs described in text-books were those of the later stage in which the joint was grossly infected.

Deformities Resulting from Incorrect Treatment.

Genu recurvatum was a deformity not uncommonly seen in cases which had been recumbent for a year or more with the knee fully extended. Where prolonged recumbency was necessary the knee should be kept slightly flexed. Genu valgum occurred generally from faulty splinting, but also at times from no ascertained cause. Scoliosis also was due to faulty splinting together with fixation of the hip in insufficient flexion and resulted from the efforts of the child to twist the body into a "sitting position" with the diseased hip held rigidly in full extension. Where the hip was ankylosed the speaker considered the optimum position to be one of 35° of flexion measured with the lumbar spine in contact with the table. This constituted the most satisfactory compromise; more flexion, while giving greater comfort in sitting down, produced a degree of lordosis in standing which often became painful in later life. For the correction of the lesser degrees of adduction Mr. Pugh practised and advised tenotomy of the adductors; but where the adduction was extreme and there was a fibrous ankylosis of the hip recurrence took place after tenotomy so that he performed a sub-trochanteric osteotomy and allowed the upper end of the lower fragment to unite with the pelvis or the lower part of the femoral neck. As regards the treatment of "abscesses," he preferred simple aspiration and did not inject any solution. When aspiration had failed or a soft spot had formed in the deep fascia he considered further delay useless and operated with the most rigid aseptic precautions, expressing the lining membrane and sewing up the wound. Sinuses were excised; the wound was bipped and sewn up without drainage. This failed in about 40 per cent. of cases, but a repetition of the operation after an interval was usually successful.

Mechanical Methods of Fixation.

Thomas, whose splint was first described 49 years ago, treated his better-class patients with splintage in bed, but his hospital patients were allowed to get about in the hip-splint with crutches and a patten on the sound foot. The latter practice resulted in a hip ankylosed in some adduction. Since the speaker believed that pressure between the joint surfaces had a prejudicial effect, he regarded some form of traction as essential in addition to immobilisation. After describing briefly the methods of fixation employed by Sayre, Lorenz, Sir R. Jones, Rollier, and others, Mr. Pugh proceeded to describe the method employed at Carshalton. With early and adequate treatment useful movement of 20° or more might be obtained in many cases, and this should be the aim of treatment. The deformity should be corrected by steady traction, under an anæsthetic if necessary, and weight extension applied to the thigh by moleskin strapping. If there was much thickening with considerable deformity it was better to correct gradually by weight extension. The joint should at the same time be immobilised by a plaster spica, the front part of which should be removed to allow of the detection of abscess formation. A perineal band for the opposite groin should be attached to studs fixed in the plaster; the latter, while it did not interfere with traction, prevented jarring of the joint and consequent muscular spasm when the bed-pan was given. The use of a frame and carriage as at Carshalton had the advantages that both knees could be kept slightly flexed, rotation could be prevented by the use of a sandal to which a wire support was attached, and exercise of the sound limb became possible without disturbing the affected joint. When the disease was quiescent, as shown by X ray examination and the fact that even slight tonic contraction had been completely absent for months, the weight extension which had been gradually reduced should be omitted, and the movements which the patient usually tried to make at this stage encouraged under careful supervision; no attempt at passive movement, however, should be permitted. The longer this stage was prolonged the greater the mobility was likely to be, but the position of the limb should be carefully observed and the progress of healing checked by X ray examination. When the patient got up he should wear a short celluloid spica or similar splint and be allowed to walk on patten and crutches. When he was in bed the spica need not be worn and he should be allowed to move the joint if any movement was possible. Especially when the joint was fixed it was important that he should be seen every week for a considerable period after the spica had been omitted lest flexion deformity occurred.

Other Methods.

Mr. T. P. McMURRAY (Liverpool) said that after Mr. Pugh's remarks it might be forgotten that the disease was not confined to the young but could occur at any age. This fact must not be overlooked. The diagnosis was usually made easily from the presence of rigidity in every direction, and should be followed by immediate and complete fixation. He employed a frame with fixed extensions in a recumbent position for a period, which varied according to the nature of the case. In the absence of a sinus, fixation lasted from 15 to 24 months. The period of recumbency came to an end when pain had been absent for six months. He considered a frame to be better than plaster as a means of fixation in the early stages since it permitted heliotherapy. Too great a degree of abduction should not be aimed at on account of the scoliosis and pain which might be produced. As regards the operative treatment, he considered that the mortality was so high that operation was never justifiable in uncomplicated cases of this disease which, as Ford remarked in 1792, was rarely fatal, unless a sinus and secondary infection occurred. With regard to abscesses, he found that the progress of many was checked by mere fixation of the joint, and only rarely was he forced to aspirate. In the latter event he usually made injections of one of the many fluids which were recommended, and he considered this exercised a beneficial effect. In the presence of a sinus leading to a detached and carious femoral head he operated and removed the head, but did not interfere with the tuberculous granulation. Other factors in the treatment were open air, and sunlight or artificial light in winter. The end-results that might be obtained were either bony ankylosis from complete destruction of the joint surfaces, or fibrous ankylosis either fixed or permitting a very limited range of movement which was frequently painful. Of these he considered bony ankylosis to be the better result. In his opinion cases which recovered with a complete restoration and perfect functional mobility of the joint had been erroneously diagnosed as tuberculous.

The PRESIDENT considered that it was quite possible to obtain perfect functional mobility in certain cases of tuberculous hip disease, for he had seen such cases recur after an interval and progress in the usual manner. One of Mr. Pugh's cases, however, he regarded as a case of cystic disease of the head of the femur, and in a similar case he, the President, had had a good result from operative treatment. He was quite sure that there was a place for operative treatment in certain cases, and he quoted a case in which excision of the head of the femur 15 years ago and dislocation of the neck on to the dorsum ilii had resulted in a cure with bony ankylosis. The patient was now able to walk 10 or 15 miles. Arthrodesis was not possible, or at least not safe, in the early stages of the disease, but was called for particularly in the later stages in adolescents or adults. It might then give the best possible result.

Sir HENRY GAUVAIN agreed almost entirely with Mr. Pugh as regards the possibility of complete recovery, but thought that there were still a number of unclassified diseases which resembled tubercle (of which Calvé's pseudo-coxalgia was only one) which responded admirably to the ordinary treatment of a tuberculous joint. In the local treatment he found that plaster moulded around the condyles afforded a good purchase for extension while leaving the knee free. If the knee were not allowed this freedom "genu recurvatum" and the condition he called "dimpled" tubercle, in which the patellar tubercle was replaced by a depression, were apt to occur. To ascertain when the patient might be allowed to sit up, he employed rotation of the femur in a jerky manner: so long as this produced spasm spreading to the abdominal muscles, recumbency was necessary. He could show cases which exhibited a complete return of function after having had abscesses in which the tubercle bacillus was demonstrated. Sea-bathing was an admirable adjunct to heliotherapy in quiescent cases.

Mr. H. A. T. FAIRBANK pointed out that if the diagnosis were made early the disease was outside the joint. In these cases, and in cases of synovial disease, it was quite possible to get a movable joint. As regards the need of flexion, he agreed that 35° was an admirable compromise, but thought it safer to aim at less flexion than was really desired, otherwise it might be difficult to prevent ankylosis at a right angle. Adduction would often recur after correction; in obstinate cases he had once or twice performed exsection of the obturator nerve by the extra-peritoneal route. He had X ray pictures which showed the adduction occurring at the epiphyseal line. In his experience true bony ankylosis was a very rare result in this disease.

Mr. ACTON DAVIS had seen a tuberculous hip recover with complete mobility. As he then regarded the case as not tuberculous the usual scheme of treatment was not carried out, and the child reappeared some time later with recurrence of the disease. He emphasised the fact that the functional results of treatment might be very good in cases exhibiting flexion and adduction, which anatomically could only be described as bad.

Mr. P. B. ROTH thought that the hip-joint was the joint which reacted best to heliotherapy. As a test of cure, he preferred a return of the normal density of the head of the bone to the Gauvain spasm test. He agreed with speakers other than Mr. McMurray as regards the treatment of abscesses and the desirability of a small angle of flexion. In his opinion the weight of the limb produced the necessary traction when Thomas's hip splint was used in the upright position.

Mr. MCCRAE AITKEN thought that synovial tubercle often recovered with a movable joint, but such cases were apt to suffer bone infection later. He had now come to the conclusion that some form of arthrodesis was the best form of treatment for old painful fibrous ankylosis or unstable joints with destruction of the head.

Mr. PUGH and Mr. MCMURRAY briefly replied.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on April 3rd, Dr. G. M. DUNCAN, the President, being in the chair, when Dr. G. MATTHEW FYFE read a paper on the

Treatment of Gonorrhœa in the Male.

After a brief sketch of the history of the disease and the anatomy of the parts, Dr. Fyfe pointed out that it was only to-day that organised scientific effort was being made to combat the evil, and went on to discuss the subject under three heads: (1) the abortive treatment of gonorrhœa; (2) the treatment of acute, subacute, and chronic gonorrhœa; (3) the standard of cure. The abortive treatment might be early or late, according as it was applied immediately after exposure, when the organism might or might not be present, or during the period of incubation, or applied when the disease had just become manifest. If the patient asked for advice after having run the risk of infection, but without showing any definite symptom, an attempt was first made to arrive at a diagnosis by microscopic examination of scrapings from the navicular fossa, and the urine was examined to exclude the possibility of recurrence of an old infection. Twice daily irrigation for three days was then instituted with two pints of a 1/8000 alkaline solution of potassium permanganate. The parts were anointed with calomel ointment, the penis strapped up, and an alkaline diuretic mixture given. If the patient presented himself with a discharge of not longer than 24 hours duration, after a proper diagnosis one of two treatments was used: either irrigation with two pints of 1/4000 alkaline potassium permanganate solution and the immediate injection of 10 per cent. argyrol or lunosol twice daily for four days, and then irrigation alone for another four days; or the sealing into the anterior urethra of 5 per cent argyrol or 10 per cent. lunosol for six hours daily for five consecutive days. Both these methods were found eminently successful, but Dr. Fyfe pointed out that the eligible patients were few.

For the treatment of acute gonorrhœa Dr. Fyfe emphasised the necessity of a careful diagnosis between anterior and posterior urethritis. Instrumental interference for diagnosis was not recommended in acute cases, as the simple two-glass test was found sufficiently reliable; palpation of the prostate should be a routine. Every effort should be made to prevent an anterior urethritis from extending posteriorly. The general treatment of acute gonorrhœa, which was highly important, consisted in confining the patient, if possible, to bed, on a bland diet with copious draughts of water, alcohol in any form being strictly forbidden, rest, hot hip baths, suspension of the parts by a T-bandage, regular evacuation of the bowels, and large doses of an alkaline diuretic with hyoscyamus and buchu. The local treatment consisted in anterior irrigation, preferably by means of a can and nozzle. The findings at the Aberdeen Clinic were in favour of anterior irrigation solely, the most useful fluid being a solution of potassium permanganate rendered alkaline by the addition of sodium carbonate, commencing with a dilution of 1/8000 gradually increased to 1/4000. If the subacute stage became prolonged, a change might be made to zinc sulphocarbolate, 1/4000, or to mercury oxycyanide 1/4000. The irrigation should be continued daily till the discharge had ceased or was manifest only as a morning drop—a stage usually reached in three or four weeks, when the irrigation could be gradually discontinued. In acute gonorrhœa the use of detoxicated vaccines had not been good. In the treatment of acute posterior urethritis the rules of general treatment should be strongly impressed; it had been found wiser not to begin posterior irrigation till the acute stage had subsided. A constant watch should be kept on the prostate in these cases. In all acute cases instruments and medicated bougies were to be avoided. The treatment of chronic gonorrhœa was a lengthy and often disappointing process, but modern methods, methodically and rationally applied, would cure almost every case. The secret of success was exact diagnosis, and only after all foci had been located should treatment be applied. The importance of regular prostatic massage was emphasised, and Dr. Fyfe described the use in diagnosis and treatment of such instruments as the urethroscope, the exploratory olivary bougie, the straight sound, the Kollman dilator, the suction apparatus of Mills, and the Ultzmann syringe. Treatment by vaccines alone was neither rational nor successful, though a better response to this treatment was obtained in chronic prostatitis than in any other condition of the chronic stage.

Complications and their treatment were then briefly dealt with, special mention being made of the magical effect of intravenous injections of electrargol in epididymitis, and finally Dr. Fyfe discussed the standard of cure. The four tests used in the Aberdeen Clinic were: examination for discharge, examination of the urine, examination of the prostatic secretion, and examination by the urethroscope. These tests should be applied at the completion of treatment, and then at monthly intervals for three months. Accessory tests were the provocative vaccine test and the complement-fixation test.

Discussion.

In the subsequent discussion there took part Mr. G. H. COLT, who referred to his experiences in treatment of the disease in Constantinople during the war, and pointed out the early symptom of itching of the glans penis; Dr. WILLIAM CHRISTIE, who emphasised the difficulties experienced in treating cases of gonorrhœa in private practice; Dr. R. RICHARDS, who stated that he had found the use of detoxicated vaccines helpful in the acute cases; Dr. GEORGE ROSE, who inquired as to the value of sandal wood oil; and the PRESIDENT, who in summing up the discussion laid great stress on the importance of the strict observance of the standard of cure and on the value of the urethroscope in diagnosis and treatment.

HUNTERIAN SOCIETY.—It has been decided that the annual award of the Hunterian Society medal, which for some years has been in abeyance, shall be re-established. The medal is awarded for the best essay on any subject which shall be submitted by any general practitioner resident within Great Britain, Ireland, or the Channel Islands, "whether Fellows of the Society or not." Essays should be sent to the hon. secretary, Dr. A. E. Mortimer Woolf, at 94, Harley-street, W., not later than Dec. 31st, 1924. The medal will be presented at the annual dinner of the Society in February following. The medallist will be expected to read his essay at the annual general meeting of the Society. The hon. secretary will forward all particulars to anyone desiring them.

Reviews and Notices of Books.

Diseases of the Nervous System.

A Text-book of Neurology and Psychiatry. Fourth edition. By **Smith Ely Jelliffe**, M.D., and **William A. White**, M.D. With 475 engravings and 13 plates. London: H. K. Lewis and Co., Ltd. 1923. Pp. 1119. 2 guineas.

The general plan of this well-known text-book, now in a merited fourth edition, is based on the conception of a division of nervous activities into three groups—vegetative, sensorimotor, and psychical—with corresponding defects of function which concern the endocrinologist, the neurologist, and the psychiatrist. Each constitutes a study and a specialty in itself, and if there are, in fact, comparatively few who claim to be experts, yet a working knowledge of each is requisite for success in the practice of any of the three. Aside from this standpoint, moreover, it is scientifically legitimate to claim that the different levels of dysfunction are but manifestations of impairment in a single unit—viz., the nervous system—conceived in its broadest sense. We have no sympathy with division of such morbid activities into watertight compartments which make passage from one to the other an unduly difficult proceeding; on the contrary, a text-book such as this serves a useful purpose beyond that which may be supposed to be its immediate purpose—it orients the inquiring mind in the direction of a conception of neural action one and indivisible, whatever form the outward expression of this action may take.

For its size the volume is sufficiently comprehensive for all practical uses; its many illustrations and tables facilitate its handiness from the viewpoint of descriptive neurology; there are numerous references to the literature to serve in further research. On the psychical side it is coloured by a definite Freudian cast, which is well illustrated in the statement that there is no pharmacotherapy for "genuine epilepsy"—in our opinion an unfortunate remark. The authors, however, are candid enough to see that a Freudian explanation of at least some mental diseases—e.g., dementia præcox—raises more difficulties than it lays. As far as the student is concerned we consider he should read the psychiatry section of the book with openmindedness, in view of the speculative nature of some of the authors' contentions; the professional reader will know just how much worth to attach to the more problematical of these.

Traumatismes du Poignet et Rayons X.

By **Étienne Destot**, of Lyons. Paris: Masson et Cie. 1923. Pp. 174. Fr.16.

Some 20 years ago there appeared a small work dealing with injuries of the wrist-joint which soon became recognised as the first complete and accurate radiological study of the various traumatic lesions which affect this region. During the years which followed its first publication, the author, Étienne Destot of Lyons, continued to assemble clinical and radiological records with a view to the production of a larger monograph on this subject. The manuscript was finished shortly before his untimely death in 1918, and it has fallen to the lot of four of his pupils to arrange for its publication. The wealth of material which forms the basis of the present work must surely be unique in the experience of a single observer. The book is divided into eight sections, as follows: (1) Anatomy and physiology; (2) sprains and scapho-semilunar subluxation; (3) fractures of the scaphoid; (4) dislocation of the carpus and mid-carpal luxation; (5) fractures of the semilunar; (6) uncommon fractures of other bones; (7) radio-carpal dislocation; (8) various types of fracture of the lower end of the radius.

The work may be regarded as a classic, and as time goes on much of its contents will be incorporated into the standard text-books of surgery and radiology. Until this happens an English translation would be of great value.

The Form and Functions of the Central Nervous System.

Second edition. By **Frederick Tilney**, M.D., and **Henry A. Riley**, M.D. With 763 illustrations, including 56 coloured. London: H. K. Lewis and Co., Ltd. 1923. Pp. 1020. £2 12*s.* 6*d.*

The favourable impression aroused by a perusal of this monumental work on its first appearance is substantiated on a glance through its new edition. There is little change from the earlier issue, except by way of incorporation of some helpful suggestions from those who have offered certain criticisms on various points. On the whole, it is strongest on the purely anatomical side; its physiology is based not a little on deductions from the clinico-pathological side—a method of great and undiminished value, but one which requires such amplification as it can obtain from the experimentalist. Detailed criticism would be out of place in a review of this character, for the technicalities of the work are of interest mainly to the neurologist and neuro-anatomist; our appreciation of the book, however, can be understood when we say it is more complete than Edinger's well-known "Vorlesungen," and much more modern than similar works that have been familiar to the student of neurology for the last 20 years.

Disease in Captive Wild Mammals and Birds.

By **Herbert Fox**, M.D., Pathologist to the Zoological Society of Philadelphia. London and Philadelphia: J. B. Lippincott. 1924. Pp. 665. 60*s.*

This work is a careful record of observations and deductions made during the past 20 years on all the mammals and birds which have suffered from disease or died in the Zoological Gardens at Philadelphia. The number of post-mortem examinations upon which the records are based was 5365; of these, 1860 were on mammals and 3505 on birds. In nearly all the large zoological gardens of the world a record of the routine post-mortem examinations is kept, but hitherto no attempt has been made to correlate the results, and this is the first time that such a record has ever been placed in a compact form before the members of the medical and veterinary professions. The original object of the work was the pursuit of knowledge for its own sake, but there is no doubt that the results have been of great practical value in the management of the Philadelphia gardens; hygiene has been improved, disinfection has been made scientific, epidemics have been arrested, and some diseases (e.g., tuberculosis in monkeys) have been entirely eliminated. Throughout the book the reader will be impressed by the way in which pathological findings are brought to bear on the diagnosis, treatment, and prophylaxis of disease. The relation of diet to disease is fully discussed in a chapter by Dr. E. P. Corson-White. An interesting table is given showing the pathological findings in relation to the dietary habits of animals. Birds and mammals which live on a mixed diet of plant and animal tissue show a lower percentage of disease of the digestive organs than those whose diet is purely carnivorous or herbivorous. Thyroid disorders are almost entirely confined to the carnivora; likewise the percentage of rickets was highest in young carnivora.

The section dealing with the incidence and significance of animal parasites emphasises the value of parasitological studies in zoological gardens, both in relation to the animals and to human beings. The early examination of the fæces of newly arrived animals for helminth eggs, and the subsequent treatment of infested cases with vermifuges, have considerably diminished the cases of parasitic enteritis and other disorders which are directly due to parasitic worms. Research on the morphology and bionomics of helminths collected after death from wild animals is being carried out at several of the larger zoological gardens, notably London and New York, and much fresh light is being thrown upon some of the common helminth infections of man by means of the study of comparative material. There is no doubt that researches upon other groups, of which a zoological collection offers a large variety, would be productive of similar good results.

The subject of tuberculosis in monkeys is dealt with at considerable length, especially from the diagnostic point of view. Owing to the difficulty in obtaining physical signs or demonstrating the tubercle bacillus in these animals, the tuberculin test is employed on every new arrival or suspected individual. Mixed bovine and human tuberculin is used, the initial dose for a monkey weighing 10 lb. being 1 mg. The variations in temperature are then taken per rectum at four-hourly intervals for 48 hours. In healthy animals there is no reaction; in tuberculous animals there is usually a definite rise in the first 12 hours, followed by a fall and a subsequent rise during the second 24 hours. The temperature of a healthy monkey is highest in the daytime during the period of greatest activity, and drops at night when the animal is at rest. Great reliance is placed on this reaction by the author, and animals which are found to be positive are not allowed to be placed on exhibit. The skin and eye tuberculin tests have been tried, but do not give reliable results. The chapter on neoplasms contains two valuable tables, one showing the type of tumour and organ of origin, the other showing the incidence in relation to sex, breeding, duration of captivity, metastases, embryological origins, and order of animal affected. The incidence of new growth was found to be highest among the rodentia and lowest among the primates, the marsupialia and carnivora came second and third on the list. The main organs affected were uterus, liver, thyroid, and mammary glands, in this order. In birds the kidney was found to be the commonest site of a primary growth. There are in all 28 very valuable statistical tables dealing with the incidence of disease, analysis of diet, and weight ratio of organs.

This is a book which merits the attention not only of the administrative staff of every zoological garden, but also of everyone interested in human and comparative pathology.

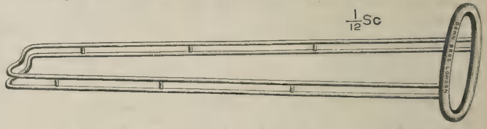
JOURNALS.

Journal of Industrial Hygiene.—The January number reports the proceedings of a joint meeting held in Buffalo between the American Association of Industrial Physicians and Surgeons and the Health Service Section of the National Safety Council. It contains a series of articles by industrial doctors dealing from experience with various aspects of occupational medical service. All are of interest, but the most useful is a description of the service established by the Endicott-Johnson corporation, employing 16,000 shoemakers. The service is complete and covers medical attention at work and at home. Each worker is examined on engagement and again six months later. A medical staff is always on duty during working hours; the medical centres had 90,000 calls in 1922, and the ambulance was in use 5000 times. A well-attended baby clinic for children of the workers is held weekly, of which pre-natal work is a feature. Dental and eye work is carried out. Nose and throat work is a specialty. The staff doctors paid 75,000 visits in the year to homes and the nurses 15,000. Convalescent homes for girls and for men are maintained. The total cost of medical service is placed at nearly $400,000 for 1922. The result is a family of happy, contented workers, who produce more finished material per worker than any similar group and have a very low labour turnover; labour disputes are unknown.—G. M. Price contributes a preliminary paper on the physical examination of 50,000 garment workers. The observations were made at the Union Health Centre, a unique, well-equipped clinic in New York, operated by workers on a self-supporting coöperative plan. One dollar is charged for examination and treatment; selected physicians received $7.50 for one and a half hours' attendance. Applicants for admission to the Garment Workers' Union are all examined medically. Only 45 out of 36,510 were rejected, but many were accepted on limited sick benefit. Two per cent. had some respiratory trouble, 1·5 per cent. had chronic heart disease, 15 per cent. gastro-intestinal disease, and 25 per cent. neurasthenia. Interest also attaches to the discussion notes referring to the papers read.—The February number contains an article dealing with physical examinations, with follow-up work, in a department store, by C. A. Swan and E. B. Emmons, which shows that only 29 per cent. of those examined had no defects, and that among the remaining 71 per cent. defects were found averaging nearly two per person. The authors hold that physical examinations are the first step in industrial preventive medicine and that the expense incurred is entirely justified by the results obtained in returns to the establishment.—D. R. Wilson contributes a valuable article on industrial lighting, in which he summarises in readable form the investigations which have been carried out by Government inquiry. The installation of lighting primarily is a question for the architect, but the standard to be attained is one which must be laid down by physiological research.—The action of irritant gases upon the respiratory tract is ably summarised by H. W. Haggard. He brings together available knowledge with regard to the various irritating gases which may occur industrially, and states the concentration at which they become dangerous, and the symptoms which result.

New Inventions.

AN IMPROVED SPLINT FOR FRACTURE OF THE FEMUR.

The routine treatment of fractured femurs, excluding the use of calliper traction, has not always yielded satisfactory results. At the present time extension by means of adhesive plaster with the limb supported on a Thomas or Hodgen splint is probably the method most in use. Quite frequently, however, there is some displacement of the fragments which extension fails to cure, and I have lately used a modification of the ordinary Thomas's knee splint, which has proved useful in correcting displacements which have persisted after reduction of the fracture and fixation by extension. As the illustration shows, the alteration consists in the addition of an extra bar fixed to the ring of the splint. Small metal struts maintain the distance between the two bars. The limb is supported on one ring and, by suitably arranging bandages on the upper bar, any lateral or antero-posterior displacement may be corrected. Thus where the upper fragment is adducted and flexed a bandage placed over it under the top bar and pulled tight will control the flexion. The use of a splint slightly bent at the knee is an additional aid. To overcome the adduction another bandage encircles the thigh above the site of fracture and is used as a lever with the outer bar as a fulcrum. A similar bandage is applied in the opposite direction below the site of fracture. The advantage of the extra bar is that it affords more opportunity for simple manipulation than the conventional single bar. The bandages should be of stout material, such as drill.



Messrs. Down Bros. are the makers of the splint.

George Sacks, M.B., B.Ch. T.C.D.

General Hospital, Swansea.

THE LANCET.

LONDON: SATURDAY, APRIL 19, 1924.

MATERNAL MORTALITY IN CHILDBIRTH.

THE publication of the Ministry of Health report by Dr. JANET CAMPBELL upon the results of an inquiry into the question of maternal mortality must serve to concentrate attention upon one of the most serious problems which confronts the medical profession to-day. Whilst the general death-rate has been reduced since the beginning of this century by almost one-third, and the infant mortality-rate during the first year of life actually halved, it is a matter of concern that the maternal deaths associated with childbirth are practically the same to-day as they were 20 years ago. That the problem is very real will be appreciated from the fact that approximately 3000 mothers in England and Wales lose their lives annually from what should be a purely physiological function. In a recent issue [1] we reviewed briefly Dr. CAMPBELL'S work, but the importance of the issues involved calls for a further reference to this valuable and painstaking report, a document which should be in the hands of all interested in the well-being of women and children, and which for this reason has been issued at the modest price of 1*s*.

The factors in the causation of this excessive mortality, as the report points out, are numerous and complex. Puerperal sepsis in its various forms accounts for by far the largest number of deaths. Next in order come the toxæmias of pregnancy, and finally, hæmorrhage takes its toll of victims. In all these conditions it is obvious that factors are at work which, in the words of the report, "are more or less directly controllable and should be controlled." In other words, the problem with which the country is faced is rather one of organisation and education than of principles directly concerned with current obstetric practice. That it is possible to conduct midwifery satisfactorily, and with little or no maternal mortality, even in the humble and insanitary dwellings of the very poor, is proved conclusively by the reports of the extern departments of the various lying-in charities. In the clinical report of the Rotunda Hospital for 1922–23 recently issued we note that in the extern department in a series of 1824 cases the maternal mortality was 0·21 per cent. In the same report, dealing with the intern department, Dr. G. FITZGIBBON calls attention to the evil results of bad midwifery in the following words: "Several cases were admitted in a moribund state, while five were admitted profoundly septic after protracted or complicated labour." Of considerable interest in this connexion is Dr. CAMPBELL'S observation that insanitary surroundings have probably much less direct influence upon puerperal mortality than is generally supposed, and that unless infection is introduced from without it does not appear that a woman who is accustomed to a low standard of living is more prone to develop sepsis after an ordinary confinement than one in a more hygienic dwelling. Even if this is the case, there can be little doubt, however, that uncleanliness and insanitary dwellings may and do spell disaster in the event of any obstetrical operation being necessary. The practitioner confronted with the treatment of a difficult complication in the presence of insanitation, overcrowding, deficient water-supply, or lack of effective lighting cannot apply those surgical principles which are so essential to prevent disaster. It is in this connexion that adequate antenatal supervision is so all-important. In the prefatory note by Sir GEORGE NEWMAN to the Ministry's report the fact is made abundantly clear that no sound progress can be made in the reduction of maternal mortality apart from antenatal supervision. It is an astonishing fact that the event of childbirth, the most clearly foreseen of all "illnesses," is inadequately prepared for. How often does an expectant mother "book" with her selected doctor, midwife, or maternity home, but fails to submit herself to the only safe method of control—namely, systematic antenatal supervision?

Antenatal supervision implies a competent knowledge of all the accidents that may befall a woman during her pregnancy and labour, and this requires a very thorough training not only in theory but in practical obstetrics. The General Medical Council has taken cognisance of this fact in its recent recommendations and resolutions in respect of the professional examinations, assigning to the training of midwifery and gynæcology a status not inferior to that of medicine and surgery. The medical schools are to-day taking steps to put these resolutions into effect, and the practitioner of to-morrow will not be able to say that he was taught surgery which he never practised and that he practised midwifery which he had never been taught. With improvements in the education of the medical student, a better training of the midwife must go hand-in-hand. Inasmuch as the responsibility of the maternal welfare is shared equally between the medical profession and the midwives, it is of the highest importance that the training of the latter should qualify them adequately to accept such responsibility. Since the passing of the Midwives Act in 1902 it is a matter for regret that so little improvement, if any, has been noted in the maternal statistics. In a series of 256 unselected cases of puerperal fever recorded by Dr. CAMPBELL, in an appendix to her report, it is noted that 102 cases occurred in the practice of midwives alone, as against 86 in which delivery was effected by a doctor. Figures such as this point to the importance of securing for a pupil-midwife the best possible training over a sufficiently long period. What this period should be is a question which has continued to engage the attention of the Central Midwives Board since the Midwives Act was passed. There is no doubt that the original period of three months' training was inadequate, and it is perhaps questionable whether the present revised regulations are sufficiently stringent to deal with the grave problems involved. When it is remembered that puerperal sepsis is the main cause of maternal mortality to-day, and that it takes the medical and nursing professions many years to assimilate the tenets of antiseptic and aseptic technique, it is asking a great deal of an uneducated woman to accept and practise those canons at the end of a few months' training. We are in absolute agreement with Dr. CAMPBELL in aiming at the total abolition of the so-called handy woman, and with the suggestion that there should be much closer coöperation between the doctor and the trained midwife. Coöperation on the lines suggested by Dr. JOHN FAIRBAIRN of shifting to the midwife those parts of medical service which are least essential, and relieving her of the responsibilities of those which are most essential, would go a long way in removing many evils which at present exist. Every prospective mother should have the advantage of a considered medical opinion during her pregnancy, although the actual conduct of normal labour might safely be left in the hands of an efficient midwife. In other words, it is the duty of the medical profession to prevent disaster, and prevention can only be secured by adequate preparation and supervision. Midwifery so conducted should not unduly tax the time of any doctor, since antenatal and postnatal observations can, in the words of the report, "be carried out without conflicting with the claims of other patients"; a very important factor in the day of the busy general practitioner. By contrast the time and energy that have to be devoted to coping with individual cases which, for whatever cause, have been allowed to progress too far without supervision is great indeed. Such cases form the bulk of those to which the practitioner is summoned by the midwife in distress, and we propose shortly to issue a special supplement designed to help him to deal with them. With the adoption of an improved antenatal and midwifery service on coöperative lines between midwives and practitioners, increased facilities must also be provided for dealing with obstetric problems. Where danger is anticipated there should be no obstacle in securing the services of adequate assistance whether it take the form of accommodation of a hospital bed, the provision of efficient nursing, or the help of a skilled obstetrician.

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[1] THE LANCET, April 5th, p. 716.

The report of the Ministry calls attention to the fact that the returns of large cities such as Birmingham, Manchester, and Liverpool, where maternity work has been organised over a long period, show that systematic efforts over the whole country would undoubtedly lead to an appreciable saving of maternal life and health. It should not be impossible to overcome the financial and other difficulties involved in the building of a complete maternity service. A great deal has been accomplished within recent years in the reduction of infant mortality, and it can be anticipated with confidence that a similar concerted effort would result in a like benefit to the mothers of the nation. Dr. CAMPBELL is to be congratulated upon the work she has accomplished in accumulating such a mass of evidence and putting it forward in such a convincing manner.

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THE THERAPEUTIC SUBSTANCES BILL.

ON April 8th the Therapeutic Substances Bill was read a second time in the House of Lords. Under its provisions the manufacture and sale, by those who are not medical men, of vaccines, sera, salvarsan and its substitutes, insulin, and pituitary extract can only be carried out in this country under licence granted by the Minister of Health, and importation from abroad is restricted in conformity. Few of the many vaccines, sera, toxins, antitoxins, and antigens are at present capable of accurate titration. The potency of diphtheria and tetanus antitoxins, however, can be determined with a high degree of accuracy. In respect of these substances, powers similar to those sought for under the proposed Bill were secured in Germany in 1896 and in the United States in 1902. Diphtheria toxin to be used in the Schick test for susceptibility and toxin-antitoxin mixtures for immunising purposes should also be carefully evaluated before they are sold. There are, as yet, no accurate well-established methods for determining the potency of therapeutic sera such as anti-dysentery serum and anti-pneumococcic serum, and in the case of vaccines all that is possible at present is to determine the number of organisms in a certain volume of the preparations. The firms manufacturing antitoxins and vaccines in this country are of high reputation and have supplied trustworthy products for many years, so that it may appear that the need for the control of the supply of these substances is not urgent. At any time, however, similar products may be imported from abroad, and in the absence of such legislation as is contemplated there is no means of ensuring their purity and potency. There is reason to suppose that steps to control all these preparations will be welcomed by British manufacturers.

For the remaining substances, except pituitary extract, control of a temporary nature exists already; a fortuitous circumstance has in the case of salvarsan and insulin enabled advantage to be taken of the patent laws to obtain a check on the manufacture. In the case of salvarsan, the circumstance was the outbreak of war; at that time the supply of German salvarsan was cut off, and British manufacturers who had facilities for making it applied to the Board of Trade for licence to do so, in order to protect themselves from the possibility of post-war litigation for infringement of German patents. It was made a condition of holding such licences that the products should be subjected to biological tests designed to exclude unduly toxic samples, to be carried out by the Medical Research Council. After the war this arrangement came to an end, and as a result of Board of Trade negotiations the manufacturers continued production with licences granted directly by the German patentees. Biological control of salvarsan and neo-salvarsan would then have stopped but for the circumstance that the Ministry of Health was the largest purchaser of these substances; on this account the German makers were induced to insert in their licence to British manufacturers a clause providing for biological control of all products of this nature. At present, therefore, the accident of the war has enabled the Ministry of Health to persuade the German patentees to demand from the British makers biological control. To such circuitous courses does the absence of legislation lead. However, in a short time the salvarsan patents expire, and, as matters stand, the present checks will disappear; those who are familiar with the reports of the Salvarsan Committee are aware that it will be easy in that case for serious changes in the toxicity and therapeutic value of the preparations to occur, however carefully and conscientiously the chemical preparation is effected.

Control exists at present also for insulin, but again because of the accident that the original patent-holder is the University of Toronto, a body concerned to see that the manufacture of insulin is carried out for public rather than private interest. The patent rights in this country were offered to and accepted by the Medical Research Council for the very reason that as no legislation such as this Bill contemplates existed in England, it was only by holding these rights that any control over the efficiency and uniformity of the product sold could be maintained. There are those who have expressed doubts whether the part played by the Medical Research Council made for a rapid and adequate supply of insulin to diabetics; to such we may recommend an inspection of the state of affairs in France, where, in the absence of central expert control, the insulin supply still remains inadequate, untrustworthy, and expensive. It is not sufficiently realised that the large-scale manufacture of products such as insulin and pituitary extract is a comparatively new problem, which is almost as much outside the realm of a pure chemist as is a surgical operation, so that even the large manufacturers of drugs have been for the most part without the skill and experience necessary to deal with it. For pituitary extract there is at present no control, consequently the position as regards uniformity of potency is chaotic. A year and a half ago a report of the Medical Research Council stated that of five samples supplied on request by different manufacturers, the activity, as tested by the power to produce contraction of plain muscle, varied from 80 to 1. The reason for this discrepancy was in part due to the absence of a standard, and in part to the lack of any indication from the clinicians to the manufacturer of the suitable strength at which extracts should be made. At a conference in Edinburgh in July last of the leading pharmacologists of all countries (under the auspices of the League of Nation's Health Committee) to discuss international standards for biological products, a standard for pituitary extracts was adopted for investigation. If subsequently this standard is recommended by the League of Nations to the different governments, such recommendation, so far as this country is concerned, will be useless unless the provision in the Therapeutic Substances Bill becomes law.

We need not dwell further on the dangers arising from the present position. It is not surprising that accidents are reported in the use of pituitary extract in obstetrics when so wide a variation exists between the potency of different preparations; it is clear that a practitioner, accustomed to the use of one preparation, who for some reason changes to another, runs a serious risk of administering a dose much larger or much smaller than he intends. Practitioner and patient alike require the protection which this Bill proposes to confer.

PUBLIC HEALTH WORK BY THE LEAGUE OF NATIONS.

THE Covenant of the League of Nations established a machinery for bettering relations between Governments and for coördinating their action, not only in connexion with questions of keeping the peace, limiting armaments, and the many other political functions with which the League is ordinarily associated, but also in the work of the different technical organisations which have been set up under its auspices. It was fitting, therefore, that the Minister of Health should have been present at the lecture given by Dr. L. RAJCHMAN at the Royal Society of Medicine last week on the Health Organisation of the League, and should have introduced the subject by a most instructive preliminary address from the point of view of his Department and of the British Government generally. Mr. WHEATLEY drew attention to the fact that the formation of the Ministry of Health five years ago carried with it a closer association between the Government and medical and health questions than had existed previously; not only in his own department but in those specially concerned with medical research and the hygiene of schools and factories, all of which must be taken into account when reviewing the position of public medicine as a whole in this country and its relations to the State. Every one of these developments involves fresh points of contact with corresponding work in other countries, sometimes administrative when international understandings and agreements are needed, but more often educative, to make the experience of one country available for the others. While medical science has always been truly international and its practitioners have found their own ways of learning from abroad with little or no aid from the State, there are certain spheres in which there can be no question of the advantage which can be derived from the existence of an effective method of bringing together the different national public health services in the way which the Health Organisation of the League of Nations is now attempting. The establishment of a suitable body for this purpose has required some little time and negotiation, but it may now be regarded as completed, thanks to the fortunate arrangement by which the League will now be able to utilise the work and experience of the Paris International Health Office as part of its organisation; and it has already started with two exceptional advantages; the participation of the public health services of countries which ordinarily are thought of as being outside the League of Nations—the United States, Germany and Russia; and the special interest of the Rockefeller Foundation, which has supplemented the League's slender budget for health purposes (about £33,000) by donations for particular purposes.

Dr. RAJCHMAN was able in his lecture to outline the work which now lies before this Organisation and to speak of some results already achieved. The multifarious activities to which he referred appear to have become capable of this broad classification: (1) international agreements on health questions; (2) "standardisation"; (3) the comparative study of disease; (4) educational courses; and (5) official international coöperation for the prevention of epidemics. It is well known that the last-named of these activities bore very good fruit in Eastern Europe in connexion with the recent great epidemics in Soviet Russia, and it is satisfactory to learn that this type of work is to be extended to deal with the very notable increase of malaria which has taken place during the last two years in that country and in the Balkan States. Among the recent international agreements which already stand to the credit of the International Health Office is that which provides for the gratuitous treatment by modern methods of sailors suffering from venereal diseases at different ports of the world, the revision of the International Nomenclature of the Causes of Death, and a great deal of preparatory work in anticipation of the much-needed recasting of the International Sanitary Convention of 1912, the principal document governing the practice of quarantine. The work of "standardisation" is exemplified by the arrangements for joint expert studies and conferences which have led to the uniform adoption of the Ehrlich standard for diphtheria antitoxin, and have already brought us much nearer to general agreement on units and tests for various other therapeutic serums and products, including the glandular preparations which were specially studied by the League of Nations Health Conference last year in Edinburgh with the active participation of the Medical Research Council. Similar progress has been made with the comparison of values of the Wassermann and flocculation tests for the diagnosis of syphilis, recently carried out by representative bacteriologists at Copenhagen under the direction of Dr. TH. MADSEN. The nature of the educational courses has been illustrated during the last two months by the visit of some 50 foreign medical officers, from 25 different countries, to take part in a system of demonstrations of British health work organised by the Society of Medical Officers of Health; demonstrations which besides general public health work have included the specialist requirements of tuberculosis officers and school medical officers. A number of similar courses in which British medical officers have participated have already been held in foreign countries, and this year these will be continued in Switzerland, Holland, and Denmark while, as a further development of the same principle, arrangements are being made for conferences of medical statisticians for mutual study of the conditions under which the vital statistics of different countries are obtained. As one outcome of these statistical comparisons the Health Committee of the League has appointed a subcommittee, with experts attached, to investigate the causes of certain notable variations in death-rates from cancer, as reported from different countries.

It must be concluded from Dr. Rajchman's lucid account that a goodly number of vessels have been launched and that some of them will have a long and difficult course before they come into port. But though the programme which the Health Organisation has set before itself is an extensive one, it clearly gives an indication of the work being pursued in a thoroughly practical spirit. It is encouraging, moreover, to note the care which seems to be given to the selection of those undertakings which are appropriate to the League of Nations machinery and can hardly be effected without it. Mr. Wheatley reminded the Society that the Organisation had its birth in the British Ministry of Health in 1919. The progress since made is greatly to the credit of the handful of public health administrators from different countries who then laid down the main objectives of the Organisation and have since given so much labour and thought to its development.

Annotations.

"Ne quid nimis."

RADIOGRAPHIC METHODS IN THE LOCALISATION OF SPINAL AND CEREBRAL TUMOURS.

The complete diagnosis of tumours of the central nervous system is notoriously difficult. With spinal tumours the doubt arises as to the nature of the lesion, and consequently whether the patient can be relieved by operation; with cerebral tumours the chief difficulty is one of localisation. Hitherto we have been entirely dependent for localisation on our very incomplete knowledge of spinal and cerebral physiology, but recently two methods depending on radiography have been introduced—lipiodol injection, for spinal lesions, and pneumo-ventriculography for cerebral lesions. The injection of lipiodol into the spinal theca was first used by Sicard and Forrestier in Paris about a year ago and soon afterwards by Sargent in this country, and it has already been applied to a large variety of spinal cases. Lipiodol, a compound of iodine with a lipoid substance obtained from black-poppy pods, is a heavy fluid, very opaque to X rays, and apparently harmless to the nervous system. The method of using it consists in injecting 1 or 2 c.cm. by means of an ordinary lumbar puncture needle either into the lumbar theca, in which case the lipiodol is made to flow slowly towards the upper parts by tilting the subject, head downwards, at an angle of about 45 degrees, or between the occiput and the atlas into the cervical theca, in which case the lipiodol flows downwards. In either case any site of compression is shown radiographically by an arrest of the passage of the lipiodol, and the shape of the shadow produced may give important information as to the nature of the compression. The value of such a procedure is obvious: it may confirm or correct the "physiological" localisation, it may be of the greatest help in deciding the desirability of operating on a given case, and it may show the longitudinal extent of the compression which the surgeon has to deal with. The only danger attached to it arises when the sub-occipital site of injection is employed, and then it is that of sub-occipital puncture in general. The lipiodol itself seems to be innocuous; if no operation be performed it is allowed to remain in the theca and it gives rise to no symptoms; it is absorbed very slowly, if at all, for its presence has been demonstrated three months after injection. The difficulties of the procedure are merely those of taking X ray photographs of a patient in a slanting position, few X ray departments being equipped with tables that can be set at any desired angle. This difficulty can be overcome if the patient be placed in what Sicard calls "the position of the Mohammedan in prayer"; the injection can be performed and the radiograms taken in this position.

The procedure that has been introduced for cerebral radiographic diagnosis is pneumo-ventriculography. Its object is to show, by means of stereoscopic radiograms, changes in the shape of the lateral ventricles caused by the pressure of a tumour; and in order that the ventricles may be seen in an X ray photograph, the cerebro-spinal fluid in them is replaced by air. There are two very different techniques. Weed and Dandy, in America, introduced the method of direct puncture of the ventricle through a trephine opening in the parietal bone. With the patient lying on what was believed to be the affected side, they made a puncture on the other side of the brain and drawing off about 5 c.cm. of fluid at a time, they replaced it by air until 25–30 c.cm. of air were introduced; then they took a radiogram or set of radiograms; the patient's head was then turned over and the air made its way, via the foramina of Munro, into the lateral ventricle of the affected side, when a second skiagram was taken. The body of the ventricle might be greatly narrowed or completely occluded by a tumour in the parietal lobe, while tumours of the frontal, occipital, or temporal lobes would cause occlusion or distortion of the corresponding ventricular horns. Weed and Dandy claimed that by using this method they had not failed to localise any of a series of 200 cerebral tumours. The procedure has not found favour in this country; but, at the meeting of the Section of Neurology of the Royal Society of Medicine, reported on p. 803, Mr. Geoffrey Jefferson and Mr. A. A. McConnell were each able to give their experiences of it and to point out the difficulties. They found that in some cases the air did not find its way easily from one ventricle to the other and bilateral puncture had to be performed, that the amount of air introduced was insufficient, and that a definite mortality was attached to the operation.

An alternative technique comes from Germany and has been even less used in this country than the American method. At the meeting referred to, two speakers described varying success with it. In this method the puncture is made into the lumbar theca while the patient sits upright, and the cerebro-spinal fluid is drawn off 2 or 3 c.cm. at a time and replaced by air until 70–100 c.cm. of fluid have been withdrawn; then stereoscopic radiograms are taken of the skull. It is found that some air finds its way into the ventricles so that a ventriculogram is obtained. Such a procedure is certainly not free from danger, for in the case of tumours of the posterior cranial fossa the withdrawal of the spinal fluid is very liable to lead to the formation of a fatal conus cerebellaris. Yet one German neurologist has been able, obviously by a careful choice of cases, to perform the operation in 250 cases of various kinds without a fatality; in most cases there was no more untoward result than a severe headache, but in a few cases fits and febrile disturbances occurred. It seems probable that with improvement of technique some method of encephalography may lead to developments both in cerebral surgery and in our knowledge of cerebral physiology.

THE NURSE'S CURRICULUM.

An inquiry from the chairman of the Committee on Nursing of the Buffalo Academy of Medicine concerning the attitude of the Public Health Committee of the New York Academy of Medicine[1] on the matter of nurse training has led to a series of recommendations which will doubtless be regarded in certain quarters as reactionary. The report submitted by the committee emphasised the following points: 1. That the training course of nurses should be shortened considerably and should not cover a period of more than two years. 2. That there should be a revision of the curriculum, and that more stress should be laid on the acquisition of practical experience, and a better balance established between the various branches of nursing work than exists at present in actual practice. 3. That the first year of training should be so arranged that students who are compelled to discontinue their training for causes other than moral or mental deficiency may qualify as nurse attendants and should be eligible for licence examinations as such. 4. That graduate nurse attendants should be allowed to work in hospitals in order to increase further their proficiency and relieve the nursing shortage which now exists in many institutions. 5. That in planning a revision of the curriculum in nurse training schools the advice and guidance of the medical profession should be sought. The committee is likewise of the opinion that the Nurse Training School Council of the Board of Regents, in addition to its present membership, should include representatives of the trustees of hospitals. These suggestions are to some extent in line with the recommendations of the committee appointed by the Rockefeller Foundation.[2] This Rockefeller committee also recommends a reduction of the course at the hospital training schools to 24 months, preceded by four months' training in the basic sciences and in elementary nursing procedures; but this recommendation is dependent on the elimination of routine duties of no educational value and implies not a lowering, but a raising of standards. It is not clear whether the New York Medical Academy have designed their policy in the interests of the nurse or in those of the hospital service, for no suggestion is made that the shorter course should be more concentrated. Indeed, Clause 3, with its emphasis on the acquisition of practical experience, is not encouraging in this respect. Clauses 3 and 4, relating to nurse attendants, are unlikely to find favour in the nursing profession. While many agree that some sort of subsidiary nurse is needed by chronic cases who cannot afford and do not require the continued skilled attention of a fully-trained nurse, a rigid separation of the conditions under which they are taught is essential if confusion as to their status and competence is to be avoided.

THE WASSERMANN AND SACHS-GEORGI REACTIONS IN MALARIA.

Dr. G. Marcialis,[3] of the Medical Section of the Sassari Civil Hospital, reviews the literature, and records his observations on the Wassermann and Sachs-Georgi reactions in 225 cases of malaria, which were classified as follows: benign tertian, 44; quartan, 58; malignant tertian, 71; chronic malaria, 40; malarial cachexia, 12. Both the Wassermann and Sachs-Georgi reactions were negative in all the cases of benign tertian alike during the febrile attacks and in the intervals between the attacks. With one exception in which it was feebly positive during the attack, the Wassermann reaction was negative in all the 58 cases of quartan malaria, and the Sachs-Georgi reaction was negative without any exception in this group. The patient with a feebly positive Wassermann reaction was a child with no history or clinical evidence of syphilis, inherited or acquired. Of the 71 cases of malignant tertian the Wassermann reaction was strongly positive in five, both during the attack and in the apyrexial intervals, but these patients were also syphilitic subjects. In three with no history or evidence of syphilis it was feebly positive during the attacks only and not in the intervals. The Sachs-Georgi reaction was positive in ten cases, in five of which there was no history or evidence of syphilis during the attack and in five during the intervals. Both reactions were negative in all the cases of chronic malaria and malarial cachexia, during the attacks as well as in the apyrexial intervals. Injection of quinine in the syphilitic cases with the ordinary doses had no effect on the specific reactions in the serum, nor did the addition of large quantities of various quinine salts have any effect on the reactions of syphilitic serum in vitro. In connexion with this case allusion may be made to a fatal case of æstivo-autumnal malaria recently reported by Dr. G. McConnell,[4] of the Cleveland City Hospital. The patient was a man, aged 48, with a positive Wassermann reaction, in whom there was no clinical evidence of syphilis in spite of a history of infection 25 years previously. The necropsy, however, showed very definite syphilitic lesions of the aorta. Dr. McConnell remarks that previous statements to the effect that a positive Wassermann reaction may occur in malaria apart from syphilis were largely based on clinical examination only. The experience at the Cleveland City Hospital has been that when a necropsy has been performed on a patient with a positive Wassermann reaction veritable syphilitic lesions are always discovered.

THE ÆTIOLOGY OF SUMMER DIARRHŒA.

DURING the past decade or two widely divergent views have been put forward to explain the attacks of diarrhœa which infants are peculiarly susceptible to in the hottest summer months. Bacterial activity in milk before it reaches the consumer is held responsible for this kind of diarrhœa by some, while others trace it to the pyrexia which exposure to the sun may alone induce. Evidence in support of the latter view is put forward by Prof. Arvo Ylppö, of Helsingfors, in *Acta Pœdiatrica* (1924, vol. iii., fasc. 2, p. 213). The incident which prompted his investigations occurred on a warm day early in May, 1920, when a dozen prematurely born infants were given an over-exposure to the sun. All developed pyrexia, the temperatures of the three youngest infants, who were less than three months old, ranging from 39·6° C. to 40·5° C. Later in the same day they suffered from diarrhœa and vomiting. It seemed likely that the normal chemical reactions within the stomach and intestines had been upset by this bout of fever, and to throw further light on this problem Prof. Ylppö investigated the acidity of the gastric juice of several infants before and after the induction of pyrexia. He induced pyrexia by putting infants in a bath the temperature of which was gradually raised to 41°–42° C. After staying in this bath for 15 to 20 minutes, the infants were put in a hot pack which had been wrung out in water at a temperature of 45° C. In another series of experiments pyrexia was induced by the intracutaneous injection of calf lymph intended for vaccination. This lymph was diluted with sterile normal saline solution in the proportion of 1 to 10, and injected into the skin of the thigh at two points, 0·1 c.cm. being introduced at each point. The fever thus provoked occurred seven to ten days later, and lasted for one to five days. In both series of experiments it was found that a considerable proportion of the infants showed an appreciable lowering of the acidity of the gastric juice during the period of pyrexia. Prof. Ylppö suggests that even a temporary reduction of the acidity of the gastric juice provoked by a transient bout of pyrexia may prove fateful to the infant who happens to harbour pathogenic germs, such as those of the typhoid and dysentery groups, in the summer months. It has been shown that with a pH about 4 the gastric juice destroys these germs, and that with a pH about 5 the growth of these germs is considerably inhibited. In some of Prof. Ylppö's experiments the pH showed figures as low as 5·6–5·8, at which level of acidity the gastric juice exercises only a negligible bactericidal action on the germs of the typhoid and dysentery groups. These interesting observations afford some clue to the genesis of diarrhœa caused by parenteral injection or infection.

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[1] Summary of the Activities of the Public Health Committee of the New York Academy of Medicine for the year 1923. New York City, 17, West Forty-third-street.

[2] THE LANCET, 1923, ii., 1203.

[3] Gazzetta degli Ospedali et delle Cliniche, Jan. 27th, 1924.

[4] Journal of the American Medical Association, 1923, lxxx., 1123.

VACCINE TREATMENT OF EPIDEMIC ENCEPHALITIS.

AT a recent meeting of the Société de Thérapeutique of Paris, MM. A. Marie and Poincloux[1] reported the results of treatment of eight cases of Parkinsonism, following epidemic encephalitis, by intraspinal injection of the fixed virus of encephalitis. After removal of cerebro-spinal fluid, 1–5 c.cm. of a centrifugalised emulsion of the brain of a rabbit which had died of experimental encephalitis was injected. The emulsion represented a dilution of 1 in 20 of a virulent brain which had been kept in the ice-chest for 24–48 hours before use. The injection was followed by a rise of temperature ranging from 101·2° to 104° F., signs of meningeal irritation, cerebro spinal lymphocytosis, and a change in the clinical condition. The rise of temperature occurred 20 hours after inoculation, and lasted 24–36 hours, when the temperature fell to normal, except in two cases in which it remained between 100·4° and 102·2° for a week. The emulsion of a normal brain or of a virulent brain which had been inactivated by heat did not produce any rise of temperature. Signs of meningeal irritation consisted of pain in the head and spine, nausea, vomiting, pains in the limbs, and in one case Kernig's sign. The cellular reaction was always a lymphocytosis, which in several instances was very intense. Cases in which clinical improvement took place were those in which the temperature was highest and lymphocytosis was most marked. As regards results, two of the cases had to be excluded, as the patients refused further treatment after only two injections. Their present condition, however, is better than before, and at least tends to show the harmlessness of the method. Of the six others, two presented no improvement, while four had made remarkable progress. One patient in particular was able to get up, dress herself, read a little, and play the piano, which she had not done for four years. The writers suggest that even better results might be obtained if this treatment were adopted at the onset of encephalitis, and that it might possibly be of prophylactic service in epidemic times.

THE TREATMENT OF LEPROSY.

THE subject of leprosy engages more than ordinary attention and interest at the present moment on account of the energetic measures that are being taken for the eradication of this dread disease in the British Empire, and Sir Leonard Rogers, chairman of the Medical Committee of the British Empire Leprosy Relief Association, reviews in the March number of the *Tropical Diseases Bulletin* (Vol. XXI., No. 3) the recent literature dealing with the malady. The *Bulletin* further outlines the scope and object of the campaign against leprosy, showing how the medical policy is directed towards extending the application of improved methods of treatment throughout the Empire, not only by supplying the necessary drugs, but also by training those in charge of lepers to apply them. Researches on the ætiology and treatment of the disease are encouraged, and support is given to sound schemes of segregation. The method by which the work is carried out is illustrated by Dr. H. W. Wade, in a paper dealing with the Culion Leper Colony in the Philippines. Prior to May, 1921, he states, the staff was insufficient to enable any systematic treatment amongst the 4500 lepers to be undertaken, but in 1923 it was possible to record systematic observations on selected cases to the number of 4067. Intravenous injections of Rogers's original preparations were soon dropped on account of venous troubles, and in their stead chaulmoogra esters, plain or iodised, were injected intramuscularly. A survey on Sept. 30th, 1923, showed improvement in 55·9 per cent., while in a further 36 per cent. the disease had been checked; 6·4 per cent. of the cases showed retrogression, and in 1·7 per cent. of the total death occurred. Further progress of this crucial test will be watched with great interest. The principles underlying treatment are set forth in a paper contributed by Dr. G. E. Muir. He believes it is necessary to strengthen the body resistance and to induce repeated small reactions due to the breaking up and setting free of the bacilli in the tissues—a process which must be carefully controlled. A rise of temperature may be beneficial, and a case is quoted in which the leprotic lesions disappeared with the onset of kala-azar. Muir believes that injections of hydnocarpate esters into the skin lesions causes the most rapid improvement, and concludes that early and persistent treatment arrests the disease and causes gradual disappearance of the signs and symptoms. In an informative and careful study on prophylaxis, Rogers sums up the matter by saying that the main point is the avoidance of contact between lepers and healthy individuals, and, in order to do this successfully, cases must be detected in an early stage of the disease. Instances are given of the good effects which have resulted from segregation in Norway, Sweden, Iceland, and Eastern Canada.

CULTIVATION OF MICRO-ORGANISMS IN TISSUE PLASMA CULTURES.

S. B. Wolbach[1] and M. J. Schlesinger, encouraged by the work of H. Zinsser [2] and E. G. Carey on rat leprosy, have succeeded in obtaining what they believe to be a multiplication of rickettsia organisms in guinea-pig plasma-tissue cultures. The strain of Rocky Mountain spotted fever virus was maintained for over a year in guinea-pigs, while that of typhus was originally brought from Poland and was maintained by passage in the laboratories at Harvard. Special technique was devised, guinea-pig tissues being employed throughout; in the case of Rocky Mountain spotted fever the testicular and in the case of the typhus the brain tissues were used. Blood from half-grown guinea-pigs provided the source of the plasma and a technique was adopted which permitted the collection of blood, its centrifugalisation and a separation of the plasma with as few manipulations as possible. The tissue for cultivation was obtained with aseptic precautions and kept immersed in Ringer's solution until the plasma was prepared; then portions for culture were cut into pieces 0·5 to 1·0 c.mm. in size. When tissue cultures were transferred to fresh plasma, in order to prolong the period of growth, the pieces of tissue were removed from the plasma, washed in sterile Ringer's solution, transferred to fresh sterile cover-slips, and fresh plasma added. In this manner tissue cultures have been kept in active growth for four to six generations, over a period of four to six weeks. For injection into guinea-pigs the tissue cultures were teased into pieces small enough to pass through a No. 18 gauge hypodermic needle. The fragments of tissue underwent fairly prompt degeneration. Endothelial cells tended to congregate at the periphery and the only blood cells which survived for more than a few days were eosinophiles. The nerve cells underwent rapid disintegration. From tissue culture fixed and sectioned at intervals it was possible to follow the growth of the micro-organisms and to note their increase in numbers in endothelial cells in the vessel walls. The effect of the micro-organisms on the cells themselves appeared to be deleterious; it is evident that the cells containing them rapidly die, and the life of the organisms in turn is dependent upon that of the endothelial cells. In the case of Rocky Mountain spotted fever occasional filamentous forms of *Dermacentroxenus rickettsi* were observed. In the case of typhus the cells containing *Rickettsia prowazeki* congregate at the periphery of the tissue. The forms most frequently found are exact replicas of those encountered in lice fed upon typhus patients.

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[1] Bulletin de la Société de Thérapeutique, March 12th, 1924.

[1] Journal Med. Res., December, 1923, vol. xliv., No. 2, 231–256.
[2] Journal Amer. Med. Assoc., 1912, lviii., 693.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

THE Charter of Incorporation granted to the London School of Hygiene and Tropical Medicine, as mentioned in our news columns last week, carries into effect the stipulation of the International Health Board of the Rockefeller Foundation of New York, made in offering to provide and equip a School of Hygiene in London, by associating the proposed school with the University of London. The Charter lays down generally the constitution of the new body and appoints a provisional board of management who are to take steps for the erection and equipment of such a school, pending the appointment of a permanent governing body, and to form a first board of management for a period of not more than 18 months. The appointment of a fresh board of nine members after that period is provided for, and there is to be in addition a court of governors consisting of 35 members. Provision is made for the amalgamation of the existing school (the London School of Tropical Medicine) with the newly incorporated school, which will take over the work and functions of the existing school together with its equipment, laboratory, library, and museum, devoting to the purposes of tropical medicine a sum not less than the income of endowments for that purpose of the existing school at the date of transfer. The Charter further provides for the taking over of the staff of the existing school by the London School of Hygiene and Tropical Medicine, and for that body contributing to the cost of reconditioning the premises in Endsleigh Gardens of the Seamen's Hospital Society, if those premises are vacated by the existing school by reason of the amalgamation. As long as the Seamen's Hospital Society maintains a hospital for tropical diseases at Endsleigh Gardens, the London School of Hygiene and Tropical Medicine, so far as may be practicable and to such an extent as may be agreed upon, is to make use of the hospital for the clinical instruction of students of tropical medicine.

TREATMENT OF SYMPTOMATIC SCIATICA.

IT has long been recognised that one of the causes of sciatica may be arthritis or periarthritic trouble about the hip-joint. Indeed, some writers have gone so far as to attribute to this cause a majority at least of the cases of sciatic pain. In a paper on the Orthopædic Treatment of Symptomatic Sciatica, published in the *Journal of the American Medical Association* of March 22nd, Dr. Philip Lewin, of Chicago, attributes the symptoms of most of his cases to lumbo-sacral or sacro-iliac disease, and describes a method of treatment which is essentially the same in principle as that generally used for disease of the hip-joint. It involves extension by weight and pulley and physiological rest in bed, followed by ambulatory treatment, in which a plaster spica and a high boot on the sound foot and crutches are used, and finally, after cure a special thigh and loin corset is to be worn. Dr. Lewin has treated thus about 50 cases, most of which were cases of lumbar or lumbo-sacro-iliac osteo-arthritis. The results, he says, have been very satisfactory. Of late years much attention has been given in the United States to the diagnosis and treatment of sacro-iliac disease; many more cases have been reported in that country than in Great Britain, where definite arthritis of the joint from whatever cause arising is comparatively rare. The climate of the Eastern and Middle States of the Union is more extreme than that of our islands, and the seasonal alternation of severe cold with considerable heat may possibly be answerable for the amount of arthritic disease noticeable there. Many of the cases of sacro-iliac disease which have been described in American publications have been of slight severity, yet sufficiently disabling to drive sufferers to seek surgical relief, and it is these patients who are liable to suffer the machinations and thaumaturgical performances of quacks. The evidence of underlying arthritis may easily be overlooked, and we would call the attention of British surgeons to Dr. Lewin's paper as well as to others on similar affections of the spine and pelvis.

LUNACY LAW: THE HARNETT CASE APPEAL.

THE arguments in this case, which is again adjourned, have been reported at considerable length in the daily press, and no comment upon the proceedings, which would be permissible, would supply readers with any information which they have not before them. The discussions point to a judgment which will define for such cases in the future what measure of protection is extended by the existing law to those who sign certificates of lunacy, and if that measure is seen to be too scanty, we may assume that amendment of the law will follow. A comprehensive volume[1] on the law relating to lunacy appears at this opportune moment. The book is the result of the author's 15 years' experience as Master in Lunacy. Sir Henry Theobald deals in order with the royal prerogative in relation to lunatics, administrative control by various authorities, the functions of Judge and Master in Lunacy, of the Chancery Visitors, of the Board of Control, and of Poor-law authorities. The many points of contact of the lunatic with the general law are also dealt with at some length. While willing to forgo the word "lunacy" in legal proceedings and documents intended to be brought to the notice of patients, the author desires to retain the word "asylum" as concise, of pleasant sound, and with ancient association. The author's blindness has left without a cloud the mental vision which makes this tome a real compendium of knowledge on lunacy law.

Sir Humphry Rolleston has been re-elected President of the Royal College of Physicians for the ensuing year.

WE regret to announce the death on April 13th of Dr. Hugh Walsham, consulting radiologist to St. Bartholomew's Hospital, London.

THE memorial to the late Prof. Sir G. Sims Woodhead at the Cambridgeshire Tuberculosis Colony, Papworth Hall, which has taken the form of a new pathological laboratory and X ray department, will be opened on Thursday, May 8th, by the Hon. Sir Arthur Stanley The hospital, hostels, workshops, and village settlement will be open to visitors from 2 to 4 30 P.M.

AT the Royal Society of Medicine hospitality will be extended to a new movement of a modest character—which is not to say that it may not develop. A small show of artistic work by medical men will be on exhibition in the Marcus Beck Room of the Society from May 26th to June 14th, and will be open to Fellows and Members of the Society and their guests and friends. The President of the Society is promoting the exhibition, Dr. Cuthbert Lockyer acting as hon. secretary, while Mr. Sydney Kendrick has kindly consented to select the work and supervise the hanging of the pictures.

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[1] The Law Relating to Lunacy. By Sir H. C. Theobald, K.C. London: Stevens and Sons, Ltd. 1924. Pp. 854. £2 10s.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXVII.—THE TREATMENT OF SPRAINS.

ALMOST every structure in the body is subject to strain which, if repeated, or if of undue severity, is liable to produce pathological change. In this article, the effect of undue strain will be considered mainly in so far as it affects the extremities. Here the structures concerned are joints and muscles.

Joint Injuries.

Locking.—The simplest form of sprain of a joint consists of a plain locking following on prolonged muscular effort, or sudden twist or jar. There is no actual displacement, but movement is rendered painful, and the extreme range is probably limited. If the part affected is, for instance, the wrist, a sudden shake undoes the locking, the pain vanishes, and a transient discomfort alone is noticed. In severer injuries the unlocking is less easily performed, and pain and disability may persist in varying degree. This condition when occurring in the knee furnishes a typical example of cases which yield such brilliant result from so-called " bone-setting manipulation." Locking of the sacro-iliac joint (traumatic lumbago) is far more common than is supposed, and is very disabling. The pain can be relieved by manipulation followed by supporting the joint with a belt. A detailed account of the manipulations suitable to reduce the locking of the various joints will be found in an article entitled Bone-Setting (THE LANCET, 1920, i., 301).

Synovitis.—If the force to which the sprain is due is of sufficient severity to damage any of the structures which compose the joint, synovitis will usually follow, and probably ligamentous structures will be injured. The joint need not be immobilised because synovitis is present. Indeed, recovery will probably be far more rapid without unrelaxed fixation. But a sharp distinction must be drawn between the prescription of movement and of function. For instance, in the ordinary traumatic synovitis of the knee, a systematic dose of exercise of the muscles controlling the joint, and of movement of the knee will hasten absorption; but if the weight-bearing function of the knee is added to the movement, recovery will be delayed. The ideal treatment for this condition is to apply wool in large quantities round the joint (a half-pound roll of cotton-wool, fluffed out before the fire is not too much), over which mass a bandage is very firmly applied. If pressure is applied over an insufficient quantity of wool, circulation is impeded.

The idea of the application is to exert sufficient pressure on the joint to check further effusion, and, while not preventing movement, to limit it. Frequent muscle contraction, and movement so far as the pressure will allow, are then practised freely; but weight-bearing should not be allowed until the fluid is absorbed. Graduated faradic contraction is useful while effective voluntary contraction is impossible, but should not be allowed to replace it.

Torn Ligaments.

If on examination after a sprain some point of special tenderness can be discovered at a point not directly over the joint line, it is probable that some ligament has been torn. Even then there is no need for absolute fixation unless the tear is severe enough to allow displacement of the joint, but it is all the more important to prohibit function as distinct from movement. Except at the extremes of anatomical movement in a joint, no strain is laid upon the ligaments during movement. Thus a limited movement will allow repair of the torn ligament to take place while hastening the absorption of fluid and maintaining the circulation in the muscle.

Immediately after injury, pressure should be exerted over the sensitive spot by the pad and bandage already described, and, in addition, a thick pad of some non-resilient material, such as felt, should be applied over the sensitive spot, the pad being covered with adhesive plaster with the adhesive side outermost to prevent slipping. When swelling has disappeared and function is prescribed, it is well at first to support the injured structure. For example, a wedge should be placed on the inner side of the heel if the internal lateral ligament of the knee has been torn, or a corresponding wedge on the outer side if the external lateral ligament of the ankle has been injured. It is wise to limit movement by strapping; as recovery takes place full anatomical range should be allowed once a day, with the strapping removed.

The rest position of injured joints must be studied so that the action of gravity so far as is possible is obliterated. Thus in the treatment of a sprain of the acromio-clavicular joint, the weight of the arm in the upright position must be borne by supporting the olecranon firmly upon a sling, and movement must be practised only in the recumbent position. Similarly, the wrist should be treated on a short, cock-up splint between the intervals allowed for prescribed movement; this should be performed with the patient recumbent and the forearm vertical, the hand being deviated towards the side of the injured structure. The fingers should be treated during the period of rest in the flexed position. During the periods of rest the knee should be slightly flexed, and the patient encouraged to lie so that the external ligament is kept under tension if the internal lateral ligament is involved, and vice versa. The ankle should be supported at a right angle, slightly inverted or everted, according as the internal or the external ligament is damaged. A severe sprain of the shoulder may lead to disastrous results, and if abduction cannot speedily be regained in the recumbent position, the use of an abduction splint should be advocated in the acute stage. When this can be discarded the olecranon should be supported. The movement prescribed should only be performed in the recumbent position, with the weight of the arm supported on the floor or table. A severe sprain of the elbow should always be treated on conservative lines; for, although X rays may show no injury to bone, a comparatively trivial injury may often result in a massive formation of new bone if an attempt is made to hasten recovery unduly, and this may seriously impede restoration of function. The limb should be supported in the flexed position in a sling, with the extended thumb resting upon one side of the neck and the fingers on the other. When swelling has disappeared epicondyle restoration of movement may be regulated by placing a " collar " round the neck and a " cuff " round the wrist; the two are strapped together by a tape, the length of which is increased day by day. If it is found one day that the original position of flexion cannot be secured voluntarily, the flexed position should be gradually restored and the limb rested in this position for a few days, when the attempt may be renewed.

Dosage of Movement: Massage.

Increase of pain or swelling, or decrease in mobility means that too much freedom has been allowed. While pain and swelling are decreasing, and painless movement is increasing, it is safe to advance. Pain on movement means irritation of the joint, or undue strain upon a damaged ligament.

Massage.—If the injury has been severe there will almost certainly be a painful reflex protective spasm of the muscles controlling the movement of the joint. Massage skilfully applied is the correct remedy and should begin well away from the affected area. It may even be advisable to start with massage of the thigh when the ankle has been injured. As relief is experienced the injured part may be gradually approached. Only stroking and gentle kneading movements should be employed, becoming more delicate as the sensitive area is approached. The aim of the massage is to relieve muscle spasm, and so to render painless voluntary contraction possible. The use of the pad and bandage, and of strapping, is a means of exerting a sort of auto-massage of the injured part every time that movement takes place. A layer of stockinet between the strapping and the skin is of advantage, especially in those with sensitive skins. The strapping must be laid over the surface of the skin so as to exert no pressure, the object being: (1) to form an inextensible skin; (2) to limit movement.

Passive Movement.—If the injury has been very severe, passive movement may prepare the way for active movement. Passive movement, however, can be performed only after complete muscular relaxation has been secured by massage, and must be absolutely painless, or reflex contraction of the antagonists will occur and complete relaxation is no longer present. Any movement which is then performed is a forced, and not a passive, movement, and will do far more harm than good. The same applies if the movement lays any strain on a torn ligament. Provided the patient's sensory tracts are not diseased, no movement which does not elicit pain can do harm.

Torn Muscles.

If a muscle is torn as the result of a sprain, it is important to prevent adhesions from forming between the injured fibres. Treatment should begin with massage to allay spasm, and the pad and bandage or strapping is then applied according to the severity of the injury. If voluntary movement is inhibited by pain in spite of massage, faradic stimulation should be applied until voluntary action is fully restored.

Chronic Sprains.

A tendency to repeated strain means either that the supporting ligaments of the joint have been permanently stretched as a result of previous injury, in which event nothing but adequate support will prevent recurrence; or that some or all of the muscles which control the stability of the joint have lost power, and then perfect recovery will follow the building up of the muscle strength. If persistent pain is a sequel to the sprain of joints or muscles, and certain movements provoke pain, adhesions are usually present, and must either be stretched or broken down. If a muscle only is involved, stretching will sometimes follow faradic contraction or suitable exercises. If a joint is involved, occasionally restoration can be accomplished by means of massage, manipulation, and exercises; but, as a rule, manipulation under an anæsthetic is required for complete cure. This means that some abnormal structure must be torn across—that is, the re-infliction of an injury—which must be treated as a recent sprain of the part. In cases of sacro-iliac or lumbo-sacral strain these two remedies are insufficient and support is called for. In tennis elbow constant trauma may have caused a small bursa to form underneath the origin of the muscle. The bursa can sometimes be cured by inserting a needle into it and passing a galvanic current of 5 to 6 milliampères for five minutes through the needle. If this fails the patient must put up with the disability or have the bursa removed by operation. A chronic strain of the shoulder (as found in pitchers at baseball, and in lawn-tennis players) will often defy treatment, and effectively prevent further participation in the game. The trouble is probably due to a recurring sub-deltoid bursitis, and the only remedy (short of excising the bursa) is for the patient to practise abduction in the recumbent position at frequent intervals during the day, always stopping short within the limit of pain. Ionisation or diathermy relieve pain and may hasten recovery. In other cases operation may afford the only chance of relief.

A Warning.

When considering a severe strain, if there is any possibility that bony injury may have taken place, an X ray should be taken to exclude fracture. In the later stages, before forcible manipulation is undertaken, it is always wise to have the joint X rayed again, since if traumatic osteo-arthritis is advancing, it is often wiser to avoid all forcible movement.

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Special Articles.

THE TUBERCULOSIS SOCIETY:
MEETING AT CAMBRIDGE.

A MEETING of this Society was held in Cambridge on April 10th, 11th, and 12th, with Dr. E. Ward, the President, in the chair.

A Comparison of Tuberculosis in Man and Animals.

Dr. Louis Cobbett, in his paper on this subject, pointed out that not only the distribution, but the very appearance of tuberculosis varies greatly in different animals, and that in the rat, for example, tubercles look more like sarcoma or lymphadenoma than the familiar tubercles of man. The rat is the least sensitive of all animals to tuberculosis, tolerating enormous doses of tubercle bacilli. But there are limits even to the rat's resistance, and an intraperitoneal injection of 50 mg. of tubercle bacilli ultimately proves fatal. Though there may hardly be any macroscopic lesions demonstrable in such a rat, a smear from any of its organs shows enormous quantities of bacilli. Dr. Cobbett demonstrated numerous photographs and slides showing how in the lung of the ox, for example, tags or villi develop on the surface, which assumes a shaggy appearance like that of a rough towel. On the liver, however, these superficial tags become flattened and mushroom-like. A point he emphasised was the difference in the susceptibility of the various organs in the animals subject to tuberculosis. In the rabbit, for example, the lungs and kidneys seem to be most susceptible, whereas in the guinea-pig the liver and spleen come first in this matter, the kidneys proving to be remarkably resistant.

Developing the theory that it is the highly specialised and hard-worked organ which is most subject to tuberculosis, Dr. Cobbett gave an account of tuberculosis in the mammary glands of different animals. In the cow the mammary gland has become highly specialised and hard-worked because for thousands of years she has been bred by man for her milk-producing qualities. These qualities have now reached a pitch when the cow produces more and richer milk than her own progeny can digest, and Dr. Cobbett gave an amusing account of a controversy between himself and an attendant employed by the Royal Commission on Tuberculosis to feed the experimental animals. Against the advice of this attendant Dr. Cobbett gave the calves the run of their mother's milk, with the result that the calves died, their intestines being found stuffed with undigested curds. The cow has had to pay the penalty for this specialisation of her mammary glands with reduced resistance to tuberculosis in them; about 2½ per cent. of all cows suffer from tuberculosis of the udders, whereas mammary tuberculosis in the human race is exceedingly rare. Similar differences, depending on similar reasons, may be observed in the rabbit and guinea-pig. The rabbit breeds many young in one litter, and they are long dependent on their mother's milk. Hence the comparative susceptibility of the rabbit's udders to tuberculosis. The guinea-pig's udders are practically never tuberculous, and in this connexion it is noteworthy that the young guinea-pig depends on its mother for its food for only a brief interval. For the same reason the hard-worked, highly specialised brain of man is more subject to tuberculosis than the brain of the lower animals, and the comparative frequency of tuberculosis in the heart of the dog may be associated with the sudden and violent calls made on this organ by the dog. Other factors determining the occurrence of tuberculosis in various organs are their degree of exposure to infection and their capacity to retain tubercle bacilli or pass them on. With regard to the first of these points, the lymphatic glands are frequently tuberculous because they bear the brunt of the first attack; it is no discredit to them that they are tuberculous any more than it is a discredit to the police force that many of their members have broken heads. As for the second point, muscle tissue is remarkably free from tuberculosis, largely because it does not arrest tubercle bacilli which pass on. Dr. Cobbett referred to some interesting experiments on chemical affinities in connexion with the localisation of tuberculosis, and he pointed out how, when carmine is injected, it may adhere to the endothelium of some organs but not to that of others. Similarly the particles of fat in the tubercle bacillus may attract it to certain organs with a craving for the same fats. With regard to the problem of the conversion of one type to another, he thought that this process must be practically impossible for the definitely human and bovine types, and he emphasised the difficulties of experimental work in this field.

In the discussion which followed Dr. H. A. Ellis suggested that the problem of tuberculosis was largely one of acidity and alkalinity, the tubercle bacillus pining in an acid medium and when its host was fed on meat. He was convinced that all successful treatments are essentially acid treatments, being acid by virtue of increased metabolism. He referred to observations on tuberculosis on monkeys at the Zoo and the beneficial effects noted in the case of a tuberculous monkey fed on meat.

Experiences with Diaplyte Vaccines.

Dr. E. Ward read a paper on this subject, prefacing it with a review of the researches which led up to the evolution of the diaplyte vaccine. In addition to observing over 60 cases treated with this vaccine in London, he had given it to 41 of his own patients, most of whom were in the third stage of pulmonary tuberculosis and were "hang-fire" cases. There were only one or two cases in the first stage of the disease. He had also tried this vaccine in a few cases of lupus and tuberculous sinuses. After detailing his dosage he reviewed the general effects. The temperature reaction was very varied; there might be no change, or the temperature might be lowered or raised, or it might be first lowered and then raised. In some cases there was an immediate rise of temperature, and in others there was no change in the temperature, but an increased pulse-rate showed that the vaccine was doing harm. He had also seen the vaccine have a cumulative effect, the delay in the ill-effects of the vaccine not saving the patient from a very serious reaction. In several cases there was a considerable interval between the injection and the focal reaction, in the judging of which Dr. Ward insisted that the ear is more likely to be deceived than the eye. Headache, anorexia, general malaise, pain, pleurisy, hæmoptysis, and attacks of phlyctenules recurring regularly after each injection were but some of the ill-effects recorded, and many of his cases had terminated fatally. He had come to the conclusion that his observations on man were confirmatory of those of Dr. E. H. Kettle [1] on the guinea-pig, but he adumbrated the possibility of obtaining better results by modifying the technique —i.e., changing the dosage and the spacing with a view to eliminating the injurious effects of the focal reaction. He referred in appreciative terms to the stimulating effect which Dreyer's work has had on this subject, and he hoped that further knowledge of the spacing of doses of tuberculin would help to solve the problem of graduated exercise. At present the cumulative effects of frequent injections of tuberculin and graduated exercise, continued daily, struck him as injurious.

Dr. F. E. Gunter compared the action of the older tuberculins with that of diaplyte vaccine, and he discussed the relation of a high blood pressure and fatness to specific treatment. In some cases he had found a change from tuberculin to diaplyte vaccine do good. Asthmatics, he had found, derive great benefit from tuberculin, to which thin patients react less satisfactorily than fat patients. Mr. G. R. Girdlestone referred briefly to his experiences with diaplyte vaccine in surgical tuberculosis, and, like Dr. Ward, he stressed the desirability of ringing the changes on the dosage and spacing in the hope that better results may be obtained. Though he had seen no focal or general reactions, he could not, on the other hand, positively affirm that the diaplyte vaccine had done good. Dr. H. G. Trayer had treated 60 cases, nearly all pulmonary, with diaplyte vaccine. Of 25 sputum-positive women patients, 14 were improved, 4 were as before, 2 were definitely worse, and 5 were dead. Of his 35 male patients, 33 were sputum-positive. There were only 9 improved and 7 were as before. Five were worse and 14 were dead.

More than one speaker congratulated Dr. Ward on the fairness and impartiality of his paper.

Tuberculosis Work in America.

On Friday, April 11th, Dr. R. C. Matson, of the National Tuberculosis Association of America, gave an account of American tuberculosis work in general and of the activities of his Association in particular. Many of the speakers who followed him gave their own views and experiences of tuberculosis work in America, and he, in winding up the debate, had some interesting comments to make on what he had seen of tuberculosis work in England. He said that the Christmas sale of tuberculosis seals or stamps in America was first started in 1908 in coöperation with the American Red Cross, only 5 per cent. of the proceeds being devoted to the expenses of the central organisation. The rest of the money was spent in the localities in which it was raised. It was calculated by his Association that there ought to be a bed for every annual death from tuberculosis, but at present the ratio of beds to annual deaths in the U.S.A. was only 70,000 to 100,000. It had been calculated that there were nine active cases and nine latent cases for every annual death. There were about 700 sanatoriums, 595 dispensaries, and 11,000 tuberculosis nurses. There had been a reduction of the tuberculosis death-rate from 202 per 1000 in 1910, to 94·2 in 1922. Pirquet and intracutaneous tests carried out by Dr. C. H. Smith on 3500 children at the Bellevue Hospital Clinic had shown that only 40 per cent. of the 15-year-old children were tuberculin-positive. Similar findings in St. Louis and Philadelphia were in marked contrast to the 75 per cent. positive findings of various centres in Europe less than a generation ago, and it is evident that the morbidity as well as the mortality is coming down with a run in the U.S.A. Dr. Matson gave an account of the almost innumerable activities of his Association and the way in which every aspect of the problem is being scientifically and systematically tackled.

Answering various questions and criticisms, he referred in particular to European misconceptions as to the spitting habits of the average American. Whatever these may have been a generation ago, it was certainly no longer easy to spit in public, even out of doors. To do so in a tram was to ask for trouble. He did not believe that any connexion had been demonstrated between smoke abatement in the towns and the decline of tuberculosis. As for the differences in the tuberculosis rates among the various races in the U.S.A., he suggested that these differences were not merely racial but economic; these rates were high among Jews, Irishmen, and Norwegians living in poor areas, while they were comparatively low in richer areas inhabited by the same races. As for sanatorium construction, the present tendency is to prefer large, solidly constructed buildings to small extemporised sanatoriums, the efficiency and administrative cost of which leave much to be desired. He criticised the system, adopted in parts of England, of not trusting the patient; in the U.S.A. the patient is taught as much about his disease as possible, to take his own temperature, and more or less to become his own physician. In this connexion he described the steps taken to educate the public by articles in such periodicals as the *Journal of Outdoor Life*, which devotes its columns to the exposure of fake consumption cures, and to instilling the principles of hygiene. Other matters referred to were the decline of tuberculosis due to bovine infection in New York, this decline being associated with the pasteurisation of milk. Other problems touched on were those of tuberculosis in the negro, after-care, the indigent and migratory consumptive, and the effect of climate and altitude on the incidence of tuberculosis. In this last matter it is significant that as much as 30 per cent. of all the deaths from tuberculosis in Colorado occur among the natives.

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[1] THE LANCET, Jan. 12th, 1924, p. 68.

Dr. S. Roodhouse Gloyne anticipated that popular health literature, as exemplified by the American *Journal of Outdoor Life*, would not appeal to the Englishman sufficiently to give the publisher a return for his money, and he argued that the psychology of the British and American not being identical, it would be unwise to assume that what was sauce for one would be so for the other. But both he and Dr. E. Ward, who spoke on the same subject, recognised the value of popular education by the printed word. Dr. Gloyne's references to the differences between the two countries in the matter of provision for research were an oblique tribute to the public-spirited attitude of the Americans. Dr. Matson promised to give information at the Wembley Exhibition about the Framingham demonstration.

(*To be continued.*)

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Bacterial Flora of Paper Money.

PAPER money has been till recently the only currency in the hands of the public. A bacteriological investigation of paper money carried out by Dr. Kiefer, and published in the *Archiv für Hygiene*, is therefore of great practical interest. He explains that minted coin is not only from a financial point of view but also for bacteriological reasons preferable to paper money. Coined money is innocuous owing to the self-disinfecting action of the metal itself and because its small and smooth surface prevents the development of germs. The dirtiest piece of copper is from the standpoint of a bacteriologist better than newly-issued paper money. In post-war bank-notes which had been for some time in circulation 13,000 to 143,000 germs were found, whilst in pre-war bank-notes it had previously been proved that only 800 to 3000 germs were present. The reason is that previously to the war those notes were only little used and did not pass from hand to hand as at present. The number and the kind of germs was not influenced by the wear and tear of the notes, nor did the habitat of the notes matter whether they came from a butcher, a baker, or a candlestick maker. Notes which had been handled with wet fingers—e.g., in fishmongers' shops—were richer in germs, as in general dryness of the paper hinders bacterial growth. It makes a great difference, however, whether the bank-note consists of soft or of laid paper, the latter offering more opportunities for the germs to stick to the paper. The author has made investigation into the vitality of the germs and found that streptococci were virulent 54 hours, whilst enteric fever bacilli lived 11–96 days, *Bacillus dysenteriæ* (Shiga) 17–52 days, and *Staphylococcus pyogenes aureus* 93–127 days. Various infectious diseases may thus be spread by paper money more frequently than by any other article in use among the people.

Transfer of Medical Practices.

Compared with the state of things in England the transfer of practices for money is rather rare in this country and no professional agents exist who negotiate such transfers. The reason is that the German law does not sufficiently protect the purchaser of a practice against breaches of the contract by the vendor. In the official journal of the Leipziger Verband a very remarkable case of that kind was lately published where a doctor had purchased the practice and also hired a part of the house of another medical man under the condition that the vendor should abstain from practising in the respective town and its surroundings. Notwithstanding the clear provision of the contract, the vendor four weeks later began to practise again in the part of the house where he had continued to live. The purchaser then applied for an injunction at the local law court that the vendor be ordered to abstain from so doing under penalty of a large fine. The judge, however, declined to give the injunction, declaring that the provision by which the vendor had to abstain from practising was invalid. He summoned both parties before the court, and to avoid the high expenses and the long duration of a law-suit they came to an agreement of which the most important provisions were that the purchaser had to leave the house as soon as a new residence had been provided for him by the authority dealing with the distribution of dwellings (Wohnungs-Amt), that the vendor might take up practice again, but that he had to pay to the purchaser 25 per cent. of his income from club practice. The legal adviser of the Leipziger Verband, who was asked for his opinion in the case, has made the following statement: The decision of the judge was quite in accordance with numerous decisions of the High Court of Justice. That court has decided that a provision of a contract preventing a medical man from practising must be regarded as immoral and thus null and void. It is in the public interest that a doctor should carry out his medical practice and that consideration must always have priority to the private interest of a purchaser: when a vendor begins to practise again he is, of course, liable to repay the sum or part of it to the purchaser. Although the vendor cannot therefore be prosecuted in a civil law court for such breach of the contract, he is nevertheless responsible for his action to the medical court of honour, because by agreeing to a provision under the mental reservation to break his promise he has acted against the most elementary principles of medical ethics.

The Danger of Malaria Treatment in G.P.I.

The Minister of Public Health drew the attention of the medical profession to the fact that the treatment of general paralysis of the insane by injections of malaria germs—a method devised some years ago by Vienna alienists—may have the drawback that malaria, which for many years has been non-existent in Germany, may again be spread and become endemic. This is the more so because the anopheles by which malaria is conveyed is found nearly everywhere in this country. Medical men who administer the malaria treatment must therefore carefully protect the patients against the bite of the anopheles mosquito. The district medical officers of health are instructed to register every case of malaria and to investigate its origin and its possible connexion with the treatment of G.P.I.

Economy in Prescription Writing.

The sick-clubs had complained that they had great financial difficulties in bearing the enormous cost of medicines and drugs prescribed by the profession. At a recent meeting of the German Board of Public Health, a consultative body connected with the German Health Office, the matter was discussed at the request of the above office. Four members—namely, Prof. Kraus, of Berlin, and Prof. Müller, of Munich, as physicians, Prof. Jadassohn, of Breslau, as dermatologist, and Prof. Straub, of Munich, as pharmacologist, read papers on the subject. As a result the Board expressed the following opinion: that under the present bad condition of German finances in general, and of the legally instituted sick-clubs in particular, it was the duty of the medical profession to restrict the prescribing of medicines and of dietetic compounds as much as possible. Amongst compounds of equal efficacy they should choose always the least expensive, the prescription should be made in a plain form, and complicated combinations avoided. Compounds which are legally allowed to be sold without a written prescription should be given preference over others. Patent medicines ought to be avoided as much as possible and German drugs be preferred to foreign ones, because they are, as a rule, cheaper, being exempt from duties. It must, however, always be considered that an expensive drug, if more efficacious than a cheaper one, is preferable to the latter, because it shortens the time of the illness and thus makes the patient sooner able to work. Modern medicines ought to be prescribed only when their value has already been proved by competent physicians, by systematic research in hospitals and university clinics.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

AMONG the earliest annual health reports for 1923 to reach us are those of three boroughs, some of the principal statistics of which are given in the following table:—

Name of borough.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Bootle (C.B.) ..	81,580	24·5	13·1	1·7	0·9	3·1	35	85	2·0
Hornsey (B.) ..	88,325	13·8	10·5	0·7	1·6	1·9	31	52	4·0
Poole (B.) . ..	43,860	19·3	11·9	1·4	1·6	1·1	31	60	2·4

Bootle.

Dr. F. T. H. Wood states that housing remains the most pressing of the public health needs of the borough. No houses were completed by the council during 1923, but it is proposed to build 100 during 1924. It is estimated that 988 houses are required to bring the housing of the Bootle population up to the 1911 standard for the whole population of England and Wales. A tabular statement shows a marked excess of tuberculosis in Bootle since 1913, and that the rate since the war has been higher than in 1913-14. A wireless installation has been provided out of voluntary funds for the entertainment of the patients at the Linacre tuberculosis hospital. In the case of non-pulmonary tuberculosis the council maintain six beds at the Leasowe hospital for children, and also pay to the general hospitals for the treatment of adults. Venereal diseases, judged by the new cases applying at the clinic, have shown a steady decline since 1919. The total expenditure on these diseases for 1923-24 was £2135, and the council have joined with the Merseyside boroughs in a representation to the Ministry advocating that it be made a statutory obligation on sufferers to obtain treatment. It has been found necessary to increase the expenditure on free (dried) milk for mothers and infants from £250 to £300. The antenatal work grows, and during the year about one in six of the expectant mothers attended the consultations. Cases of threatened eclampsia, contracted pelvis, and syphilis were thus brought under timely treatment. The number of cases admitted to the maternity home was 109—39 for obstetric reasons and the remainder on account of unsatisfactory home accommodation. The cost of the maternity home for the year was about £1500, one-third of which was paid by the patients, the remainder being charged to the rates and Exchequer grant.

Dr. Wood points out that Bootle has the highest birth-rate of the 17 Lancashire county boroughs, but that, in spite of this fact, only three of them—viz., Southport, Blackpool, and Warrington—showed a lower infantile mortality-rate. One case of ophthalmia, which was not notified, was followed by blindness. An additional health visitor was appointed in April, and it was found possible to pay more than four visits to each baby, two visits to each child in its second year and one visit to each child between the ages of 2 and 5. The sessions at the infant welfare centres have had to be increased, and the Bootle Health Society has continued its valuable services in supplying voluntary workers, supplementing the milk assistance scheme, &c. Dr. Wood discusses the question of public health education. He attaches importance in the first place to the activities of health visitors and school nurses, and in the second place to the teaching of personal hygiene to the young during and shortly after school life, but propaganda work directed to the public in mass must not be neglected, and in pursuance of this latter aim addresses have been delivered during the year to various existing organisations at their periodical social or business meetings. The possibilities of the kinema and of broadcasting are also urged.

Hornsey.

Dr. A. T. Nankivell, in presenting his report, insists, like Dr. Wood, on the importance of public health education if we are to make further progress. Hornsey is, notably, not a self-contained town. The Census figures show that 27,534 persons leave Hornsey daily for their work, while, on the other hand, 5515 workers enter Hornsey daily. Such a daily movement of the population, Dr. Nankivell points out, often in crowded conveyances, gives great opportunities for the contraction of respiratory infections. During 1922 a mixed vaccine, designed to protect against colds, bronchitis, and pneumonia, was distributed for trial to 60 doctors in Hornsey, free of cost. Of the 60, only 21 replied to Dr. Nankivell's inquiry as to their experience of the vaccine, but of these 21 only one thought the vaccine was no use. Many of the replies are quoted and are so favourable that the experiment has been repeated this winter.

The report includes an interesting chart showing the death-rate, infant mortality, and neonatal mortality rates from 1883 to 1923. The chart shows that up to 1900 the infant mortality-rate remained unaffected by the decline in the general death-rate; that since 1900 the infant mortality has come down from the neighbourhood of 120 to the neighbourhood of 60, while the general death-rate has increased from about eight to 10 or 11; and that throughout this period of 40 years the neonatal mortality has remained practically the same with even a slight tendency to increase during the years since the war. In commenting on this last-named feature, Dr. Nankivell stresses the need for an extension of antenatal work, but also refers to the taking of drugs to bring on abortion as "a common and wide-spread practice," and a cause of infant death "well known to midwives, health visitors and doctors who are acquainted with maternity work." There are no areas in Hornsey which could be called slums, but here and there groups of dilapidated houses, sublet to several families, which need close supervision. For economic reasons the families living in these sublet houses will not be able to rent the houses which the council is preparing to build, and those who are thriftless and bad tenants would not be received into a corporation house. Dr. Nankivell mentions among the needs of Hornsey—a convalescent home, a residential open-air school, and the establishment of open-air classes.

An inquiry was made as to the prevalence of left-handedness among the school children, arising from the report of some of the head-teachers that this condition was prejudicial to the child in after-life. Among 6058 children examined, 239 were found to be left-handed and 87 ambidextrous. Of the 239 left-handed children, six had a stutter, 42 were dull and backward, 181 were of normal intelligence, and 16 more than usually bright. Of the 87 ambidextrous children, 15 were dull and backward, 69 of ordinary intelligence, and three above the normal in mentality.

Poole.

Dr. R. J. Maule Horne draws special attention to the extension of the water undertaking so as to give an ample reserve and to the sewering of two difficult areas which will enable many cesspools to be abolished. An estimate was made that in 1921 there was a shortage of 824 houses as compared with the 1911 standard. Since 1921 874 houses have been built or arranged for, and it is estimated that a further 250 houses are needed to provide for the natural increase of the population. Attention has been given to mosquito-prevention by spraying the likely breeding places with paraffin. The Poole milk does not come out well, when judged by a permissible standard of 20 parts of solid sediment per million parts of milk, as 19 samples out of 34 failed to pass this test. The analyst reports that eight out of 10 samples of butter contained an excess of water, and that a sample of lard (which ought to be free from water) contained 4·5 per cent. of water. He estimates that if all lard were similarly adulterated the population of the town would lose 2·8 tons of fat food in a year! The school report shows that the average school attendance has steadily increased from 86·1 per cent. in 1919 to 91 per cent. in 1923. Of 1199 children referred to the dental clinic, 966 (80·5 per cent.) actually attended and received treatment. Charges for treatment at the school clinic were only introduced during the year, so it is too early to speak as to the effect of the innovation.

Cardiff Port Sanitary Authority.

Dr. Ralph M. F. Picken reports that the prevalence of small-pox in Portuguese ports necessitated more than usual vigilance. The amount of shipping dealt with showed an increase over the past two years and the foreign tonnage has only been once (1916) exceeded since 1914. Twenty-eight nationalities were represented. Methods of inspection have to be very prompt, as vessels come in large numbers into five docks on the tide and go rapidly under the tips with a view to early departure. The work of the V.D. clinic at the Royal Hamadryad Seamen's Hospital has proved very valuable. The number of seamen attending for the first time, which reached its maximum (1234) in 1920, was 821 in 1923. The examination of 156 rats, caught on vessels or in warehouses, for evidence of plague, gave negative results. The number of rats destroyed during the year was less, but the campaign against them has not slackened, and Dr. Picken thinks the decrease may be attributed fairly to the increasingly efficient methods of rat destruction adopted at all ports throughout the world. *Xenopsylla cheopis*, the plague flea, was found in nine out of 21 rats from the Cardiff docks. The rats caught in vessels and warehouses at the docks are consistently of the black variety, while those found in the city are mostly brown. There is no evidence that the rat population at the docks is being replenished from the city. The drinking water of 210 ships' tanks was examined and reported to be satisfactory in 127 cases, of moderate purity in 41, of doubtful purity in 19, and contaminated in 23.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 5TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week, namely: Small-pox, 99; scarlet fever, 1336; diphtheria, 649; enteric fever, 38; pneumonia, 2025; puerperal fever, 35; cerebro-spinal fever, 13; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 190; dysentery, 14; ophthalmia neonatorum, 134. No cases of cholera, plague, or typhus fever were notified. The cases of encephalitis lethargica were notified in the following counties: London, 17; Chester, 9; Lancaster, 47; Northumberland, 9; Nottingham, 8; Warwick, 26; Yorks, W. R., 34; and elsewhere in smaller number.

Deaths.—In London, the deaths from diphtheria, which had been 10, 15, and 14 in the preceding three weeks, fell to 11 last week, and those from measles, which had been 98, 121, and 100 in the preceding three weeks, fell to 62 last week. The deaths from influenza, which had been 89, 83, and 49 in the three preceding weeks, further fell to 45 last week.

Correspondence.

"Audi alteram partem."

SCHICK IMMUNISATION IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to a letter from the Secretary of the Anti-Vivisection Society in the *Brighton Herald* of March 22nd attacking the views of Dr. D. Forbes, M.O.H. of Brighton, from which a highly distorted inference would be drawn from the results of our experiences of the Schick methods in their application to the prevention of diphtheria amongst the staff of the Bristol Fever Hospital, as recorded by me in your issue of Oct. 6th, 1923.

Our results here have shown that, although a negative Schick reaction does not *always* mean complete clinical immunity to diphtheria, under the exceptional conditions to which fever hospital staff are exposed in nursing an unusually virulent and infective type of the disease, it certainly always indicates a comparatively high immunity. Although a few of our negative reactors contracted diphtheria, it was a very mild type of disease compared to the extremely severe attacks from which members of our staff were suffering previously to our adoption of Schick's method. In reference to artificial immunity conferred by toxin-antitoxin mixture, none of our staff who has had three doses of this mixture has contracted diphtheria since our using this method, extending over a period of 26 months. With two doses a few failures of protection were recorded.

As I consider that those in close and constant contact with this disease require a higher immunity than would suffice to protect those exposed to slight and infrequent exposure to infection in the outside world, I have been giving all joining members of our staff three doses of T.A.T. mixture before allowing them to nurse in the diphtheria wards without applying the Schick test to them. Up to the present none of these 32 new members so treated, who joined since last autumn, have contracted the disease, although daily exposed to a type of disease of high virulence. None of those inoculated during the past 26 months have evinced any serious symptoms whatever.

I am personally convinced that the general use of T.A.T. in schools would exercise a profound effect in reducing the mortality from this deadly disease, but it is wise to consider that, like everything else in medicine, those methods are not *absolutely* infallible.

I am, Sir, yours faithfully,

B. A. PETERS, M.D. Camb.,

Medical Officer, Ham Green Hospital, Bristol.

April 10th, 1924.

AURAL VERTIGO.

To the Editor of THE LANCET.

SIR,—The discussion on vertigo at the Royal Society of Medicine[1] left inevitably a sense of incompleteness, as time did not permit of any attempt to harmonise the views presented from so many different angles. As I understand it will not be resumed, I would like to touch on one or two of the points raised.

1. *Equilibrium.*—I was a little surprised that no one pointed out that perfect equilibrium is possible when the semicircular canals have been completely destroyed or rendered functionless by disease or operation, so that the afferent stimuli from them are wholly absent; vertigo does not result from the absence of those stimuli, but from their perversion; when there is a lesion of the canals of whatsoever nature, there is always a potential cause of vertigo; when their action absolutely ceases, equilibrium is restored. (I am assuming for practical purposes that equilibrium and vertigo are the converse of one another, which,

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[1] THE LANCET, March 1st, p. 444.

as Mr. Fisher pointed out, is not quite true, the fact being, I think, that we use the word equilibrium to cover the physical state and the mental—i.e., the sense of equilibrium.)

Cyon showed long ago, in pigeons whose semicircular canals had been rendered completely functionless, that the Flourens phenomena did not occur. Apart from that, there are two facts as regards man which prove that equilibrium can be maintained without the aid of the semicircular canals: (1) One case certainly, and I think more, have been shown in the laryngological section in which the whole of the auditory apparatus had been extirpated on both sides, and yet perfect equilibrium was maintained. Further, the patient showed no vertigo and no nystagmus when rotated. (2) I believe that the same thing is true of all congenital deaf-mutes. I understand that they do not show vertigo with any of the ordinary tests, and they certainly are quite impervious to sea-sickness. I made inquiries at a large deaf-mute school in Brighton which I visited several times, and the master there, with 40 years experience, told me he had never known of a case.

As regards both these classes, we want to know what they lose apart from their deafness. Do they lose the sense of motion and direction in space (semicircular canals), or the sense of position in space (otoliths)? The value of the reflexes demonstrated by the Dutch investigators has to be considered carefully in this connexion. The Americans rejected from their flying corps all men who did not show the normal degree of instability when rotated, but whether this was only a general principle or was based on ascertained facts I do not know. If, as I believe, it is found that there is no serious drawback for practical purposes except deafness, we are driven to the somewhat painful conclusion that in the semicircular canals man possesses a beautiful and complex mechanism which has been superseded by higher development, and whose only positive function now is to produce some of the most disabling and distressing symptoms which the human body can experience; moreover, so bound up with the organ of hearing that it is impossible to remove it without inflicting the penalty of deafness. To further our knowledge on this point, we need, unless it has been already carried out, a systematic examination of the reactions of deaf-mutes, and of the effect on them of lesions which ordinarily cause vertigo (aural, cerebellar, &c.). Observation of the effect of an acute lesion of the fourth nerve in a deaf-mute might help to settle Mr. Fisher's doubt as to the directness of the effect of ocular lesions, and also, whether vertigo really occurs at all when the functions of the semicircular canals are abrogated, except in cerebral lesion.

2. *Aural Vertigo.*—When I read some 25 years ago the statement quoted by Sir H. Rolleston of Sir W. Gowers that nine out of ten of the cases "which seek advice for vertigo" have an aural lesion of some sort, I was rash enough to doubt it, and set to work to disprove it. After collecting something over 200 cases, I came to the conclusion that Sir W. Gowers was entirely right, and that the chances of an aural lesion being present are at least 9 to 1, though the proximate and apparent cause may be something quite different. I have to thank my friends the late Mr. Creswell Baker and Mr. A. T. Hutchison for their very kind help when there was any doubt about the ear.

It is impossible to give fully the conclusions I arrived at, much less the clinical evidence on which they are based, but I should like to state, very briefly without dogmatising, some of my own inferences.

(*a*) I believe that a patient with a permanent aural lesion, though long inactive, must be regarded as having a permanently lowered threshold for vertigo. They may never have an attack, or only at very long intervals due to some intercurrent cause which may be anything from transient dyspepsia to oncoming arteriosclerosis, but the liability is there.

(*b*) There are many causes which tend to produce slight attacks of vertigo—e.g., the climacteric, arteriosclerosis, ocular and digestive troubles; but where severe vertigo resembling the vestibular type occurs with one of these conditions, either constantly or alternating with lighter attacks, then an aural lesion is always present in addition.

(*c*) Owing to their intermittent character and the fact that the aural lesion may have been quiescent for years, the nature of aural attacks is often overlooked, unless the character of the vertigo is carefully inquired into. Like migraine, they may be concealed under the name of bilious or gastric attacks, and, rarely, may be confused with migraine where unilateral pain is present due to increased tension in a smouldering lesion.

(*d*) The causes which produce severe vertigo apart from aural trouble are quite rare; it is by no means constant in cerebral or even cerebellar tumours; the attacks in insular sclerosis are usually slight, and are not the cause of the falls which occur in that disease. Apart from this it occurs in ocular troubles, especially paralysis of the fourth nerve, and I am bound to add from my own experience, in functional disease, though very rarely. I have known two cases of neurasthenia, so-called, in which severe and disabling vertigo occurred; one was sent home from a tropical colony to an eminent London neurologist for operation as a case of cerebellar tumour. He had no signs of organic disease, and after some months' rest returned to his official duties.

(*e*) We do not know why, with lesions and conditions apparently identical, some people suffer from aural vertigo and some do not, or why they suffer at one time and not another. Some authorities, including the late Sir J. Goodhart, maintain that it only occurs in the neuropathic, but I do not think that this, though largely true, can be accepted absolutely. The fact that vertigo is found to be a normal sequel of certain tests has some bearing on this point. Moreover, the presence of a peripheral lesion differentiates it from epilepsy and migraine, though cases associated with nerve deafness are closely allied as to classification. To determine what proportion of those with aural lesions suffer from vertigo would be a very difficult matter for many reasons, some already stated. Only carefully prepared statistics from a large aural clinic would give us even an approximate idea.

I should like to enlarge on the practical importance of these points, and some others—e.g., the diagnostic value of vestibular tests—but I have already exceeded my limits. I am, Sir, yours faithfully,

EDMUND HOBHOUSE.

Brechin-place, S.W., April 7th, 1924.

GASTROMYOTOMY.

To the Editor of THE LANCET.

SIR,—The ideas expressed by Dr. T. C. Clare in his article[1] on gastromyotomy for the cure of gastric ulcer are of great interest. I should like to confirm them from another point of view. At the Yugoslavian Surgical Congress, held in September, 1921, Chief Surgeon A. Gottlieb read a paper[2] which may be unknown to British medical men, from which I give a few extracts in literal translation. My object is not to claim priority for Dr. Gottlieb, but to show that, starting from the same point, he arrived at conclusions differing somewhat from those reached by Dr. Clare. Dr. Gottlieb wrote:—

> "I acknowledge that the spasm of the pylorus partly causes the pains, but the principal pains are due to *the tonic spasm in the circular muscle fibres of the gastric segment, in which the ulcer is situated.* These are the muscle fibres which we see in X rays as a continuous circular spasm, usually yielding neither to atropine nor papaverine and not ceasing under the deepest anæsthesia. This spasm is, in my experience, the cause of the continual and extraordinary intense pains, localised by the patients in the epigastrium, and this is the principal impediment to the healing of the ulcer. I see in this

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[1] THE LANCET, 1923, ii., 602.

[2] Published in Lijecnicki vijesnik, 1922, No. 2, with a French résumé. A German report appeared in the Zentralorgan für die ges. Chirurgie under the title "Zur operativen Behandlung des pylorusfernen penetr. Magengeschwürs."

continual spasmodic contraction an analogy to the blepharospasm, associated with affections of the conjunctiva or to the spasm of the sphincter at the anal fissure."

There are certain differences in the technique of the operation as used by the two surgeons. Dr. Gottlieb does not dare to make a simple gastromyotomy, because he considers it is not certain to prevent the reuniting of the divided fibres. Therefore, after having carefully divided the muscle fibres of the segment concerned, he also cuts through the mucous membrane and employs this aperture for the establishment of a gastro-enterostomy. Thereby he accomplishes the drainage of the stomach, a principle esteemed by Sir Berkeley Moynihan and others, and also secures the principle of the alkalisation of the gastric juice. Dr. Gottlieb says:—

> "Consequently, since 1916, in dealing with 320 ulcers (65 of them penetrating) I have carried out two forms of gastro-enterostomy. For pyloric ulcer or stenosis I perform gastro-enterostomy, exactly as recommended by Bier, that is to say, a retrocolic posterior gastro-enterostomy with the aperture vertical to the longitudinal axis of the stomach, and with a short jejunal loop. When operating for a penetrating ulcer, I divide the circular muscle fibres of the gastric segment on which the ulcer is located, the incision being oblique or parallel to the long axis of the stomach, and corresponding in length to the breadth of the affected segment. . . . Very frequently it is not possible to do a posterior gastro-enterostomy, as the stomach cannot be mobilised, and it is unnecessary because Braun's gastro-enterostomy leads to the same result."

I believe the technique of Clare's operation is no simpler than Gottlieb's. The isolation of muscle fibres, the care necessary to prevent button-holing the mucous membrane, the inversion and suture of the peritoneal coat surely require as much time as a gastro-enterostomy, which is done by Gottlieb—on Bier's recommendation—by simple suture, not taking longer than 20–25 minutes. In cases of large penetrating ulcers it is sometimes difficult, but always possible, to reach the margin of the segment. A similar difficulty naturally applies also to a simple gastromyotomy. A difference exists also in the indications given for the operation. Clare restricts himself to simple uncomplicated ulcers, and refuses to operate on stenosis or hour-glass contraction. Gottlieb has given up the method in the case of simple ulcers, replacing it by a partial gastrectomy. He continues to perform the operation in cases of penetrating ulcers (which now number 80). It is these which offer the greatest difficulty to resection and in which the patients are the weakest. Some years ago I had occasion to see the excellent results obtained from this operation. Pain disappeared the same day, incidentally, I take it, the best proof for the correctness of the view of its origin. Evidently Gottlieb's best results have been reached with penetrating ulcers, and may stimulate Dr. Clare to perform gastromyotomy without gastro-enterostomy on complicated ulcers.

I am, Sir, yours faithfully,

M. GROSSMANN, M.D.,
Assistant at the Medical Clinic, Zagreb, Yugoslavie.
March 30th, 1924.

THE FACTORY SURGEON IN INDUSTRIAL WELFARE.

To the Editor of THE LANCET.

SIR,—The excellent annotation in your issue of March 29th on the Influence of the Factory Surgeon in Industrial Welfare is much to the point. The factory medical service requires extension and supervision, and demands special study on the part of certifying surgeons. It requires to cover a later age and to include re-examination at intervals where excessive heat, moisture, dust, noise, or noxious agents are encountered; also following all conditional certificates. The Home Office medical officers, knowing the conditions of labour and their particular dangers, should inspect and supervise the certifying work of the surgeon. Lectures on industrial diseases are already given at stated intervals; these courses should be enlarged to embrace all industrial risks, especially to youth, and attendance at them made compulsory in the public health diploma course. Another important point in "certifying for fitness" is that no certificate should be given at the surgeon's office or room, but only at the works, factory, or shop, where the actual working conditions can be studied. Given under such circumstances, the certificate constitutes a child's charter of protection or security.

Personal experience warrants the statement that rejections, conditional certificates, and cautionary advice amount to between 10 and 15 per cent. of the young persons presented in certain factory departments. These young people have already received exemption from school and have been previously examined by the school or family doctor. The fact serves to emphasise the necessity of an accurate knowledge of the environment of trade processes before granting "certificates of fitness" for special work. The risks attending factory and industrial life are at present largely unknown to the medical man who is not particularly interested.

I am, Sir, yours faithfully,

Wigan, April 8th, 1924. R. PROSSER WHITE.

THE PANCREAS IN RELATION TO DIABETES MELLITUS.

To the Editor of THE LANCET.

SIR,—I was interested to read Prof. Oertel's article in your issue of April 5th on the Pancreas and Diabetic Metabolism and your annotation thereon, but was surprised to find no reference to the work of Dr. H. H. Dale (Philosophical Transactions, B, 1905), who found that in a pancreas repeatedly stimulated by injections of insulin many alveoli appeared to be converted into islet tissue. He concluded that the islets are not independent structures, but formed by certain definite changes in the arrangement and properties of ordinary secreting cells, bringing about a reversion to embryonic type. In 1908 I wrote: "After all, the nature of the islets does not really settle the question of internal secretion; . . . it does not necessarily require special cells to elaborate it. In the liver we do not find certain bile-producing cells and other glycogenic cells, but all cells seem equally concerned in both the internal and external secretions of the glands. Noel Paton points out that, while the cell-islets are well developed in the duck, the pancreas plays no part in regulating the metabolism of sugar, for excision of the pancreas does not cause glycosuria in that animal." It is interesting to see a reversion to this point of view, although the evidence in favour of the production of the internal secretion of the pancreas by the cell-islets is much stronger than when I wrote those lines.

I am, Sir, yours faithfully,

W. LANGDON BROWN.
Cavendish-square, W., April 8th, 1924.

THE WASSERMANN REACTION IN DIAGNOSIS.

To the Editor of THE LANCET.

SIR,—Your leading article on Syphilis and the Death of the Child, and Dr. J. N. Cruickshank's letter on the Wassermann Reaction in the New-born appearing in your issues of March 22nd and 29th, respectively, afford further clear evidence regarding the limitation of the diagnostic powers of this valuable serological test.

Ever since the introduction of this serum reaction, I have urged the necessity of caution in accepting a positive Wassermann as conclusive evidence of syphilitic infection, and in a small book on the clinical pathology of syphilis and parasyphilis, published in 1912, I expressed the opinion that Wassermann's claim, "If one holds to the necessary preliminary precautions regarding the technique and anamnesis, then, in cases of a positive reaction it can be said with certainty that the investigated case is syphilitic," could not be accepted without reservation; although the test was undoubtedly a very great help to diagnosis and marked a great advance in clinical pathology.

The Lancet of May 4th, 1918, contained a note by myself on the Wassermann Reaction, its Use and Abuse, in which I reviewed various cases in which the pathological and clinical evidence appeared to be contradictory, and in which I stated, "I do not think that a positive diagnosis of syphilis can be based on this test alone, unsupported by either history, symptoms or the rapid improvement of doubtful lesions under anti-syphilitic treatment. If cases continue to be diagnosed as syphilitic on a positive Wassermann reaction alone, not only will many non-syphilitic cases be branded and treated as syphilitic, but this extremely valuable test will become discredited." The view that a positive Wassermann reaction was conclusive evidence of syphilis was then generally held, and Colonel L. W. Harrison, in his work on "The Diagnosis and Treatment of Venereal Diseases," published in that year, wrote, "excluding the above-mentioned (chiefly tropical) diseases one can say that a positive reaction justifies a diagnosis of syphilis." The Medical Research Committee in their Special Report Series concluded in No. 21 (published in June, 1918), "The percentage of positive Wassermann reactions in actual syphilis is so high that the test may for all practical purposes be looked upon as specific"; and in No. 23 (published in January, 1919), "We can, however, justly suggest that in the absence of such diseases this positive reaction is conclusive." Since that date evidence has accumulated that the Wassermann reaction, although an extremely useful test, is not pathognomonic, and this conclusion is confirmed by Dr. Cruickshank's investigation of this test in 1000 women and their new-born infants, which enables him to affirm that "a positive Wassermann reaction in a new-born infant is of no value in diagnosis" and "cannot be taken as an indication that the infant is syphilitic."

It is now established that a negative Wassermann is of little value in excluding syphilis in the absence of clinical symptoms, although when symptoms of a doubtful secondary or tertiary nature are present and the test proves negative we are justified in concluding that these lesions are probably *not* syphilitic. A negative reaction in tabes gives no help in diagnosis, but there is a strong probability that a patient giving a negative reaction is not suffering from general paralysis. It is now also established that a positive reaction does not necessarily mean that the individual is syphilitic, and so the time has almost arrived when this important serological test will take its proper and permanent place in the syndrome of symptoms on which correct diagnosis may be based.

I am, Sir, yours faithfully,
H. Wansey Bayly.

Harley-street, W., April 4th, 1924.

A CASE OF ANAPHYLAXIS.

To the Editor of The Lancet.

Sir,—Some interest attaches to a case of a woman, aged 25, admitted to the Isolation Hospital of the County Borough of Southport on Jan. 23rd. The patient was suffering on admission from extensive erysipelas, and there was a record of previous attacks. There had been two deaths in the house from erysipelas during the winter. She had marked albuminuria, and her condition was rendered more grave by the presence of pneumonia. The usual local treatment was given to the lesions and polyvalent antistreptococcic serum up to 100 c.cm. was injected. Complete recovery resulted, contrary to expectations, and patient was discharged Feb. 20th. An attempt was made to provide some lasting immunity by the administration of a sensitised vaccine (Besredka) in an ascending series, and it is a pity that the doctor who took over the case on discharge was unable to give the whole of the prepared doses. The interest is in the anaphylaxis. On March 24th the patient was re-admitted again, suffering from erysipelas, and the next day a tentative dose of two minims of the same serum was given in the skin of the forearm. On March 26th, 18 hours afterwards, a blotchy serum rash appeared, involving the skin of both fore-arms and the whole of the back. This disappeared in a day or two, and recovery from the primary condition was rapid and without incident.

I am, Sir, yours faithfully,
Southport, April 5th, 1924. G. C. Barnes.

ITALIAN LABELS ON PROPRIETARY MEDICINES.

To the Editor of The Lancet.

Sir,—The attention of this Association has been called to an article on page 256 of your issue of Feb. 2nd, headed Secret Remedies: Formulas Disclosed by the Makers, and in the course of editorial comments you suggest that these formulas are disclosed by the makers themselves.

The information that I have obtained in respect of such of the formulas quoted as belong to many members of this Association appears to show that, so far as those formulas which appeared on the labels to which you refer are concerned, they were evidently placed there by the importers for their own reasons and without the knowledge or consent of the maker. You are, of course, aware that these preparations go through many channels before they reach the consumer, and it appears to be a common practice for importers in Italy to make up a formula so as to enable them to get the goods through the Customs.

I feel sure you will appreciate these points being brought to your notice, as it is felt that your valued journal does not desire to publish information that tends to suggest that makers of well-known preparations are themselves publishing, or are responsible for any publication of, inaccurate formulas.

I am, Sir, yours faithfully,
J. Kenningham,
Secretary and Treasurer, Association of Manufacturers of British Proprietaries.
4, Verulam-buildings, Gray's Inn, W.C., April 9th, 1924.

List of Members of the Association of Manufacturers of British Proprietaries.

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LONDON PANEL COMMITTEE: POST-GRADUATE INSTRUCTION.

To the Editor of THE LANCET.

SIR,—Courses of post-graduate instruction have been arranged by the London Panel Committee with the assistance of the authorities of Guy's Hospital and Middlesex Hospital to commence in May. The course at Guy's Hospital will be in general medicine, and at Middlesex Hospital in the diagnosis and treatment of cancer. Each course will consist of ten lectures, those at Guy's Hospital commencing on May 1st and those at Middlesex Hospital on May 8th. The classes will be held on Thursday afternoons at 4 P.M., with the exception of one at the Middlesex Hospital, which has been altered to Wednesday, June 25th, to suit the convenience of the lecturer. The fee for each course will be £3 3*s.*, payable in advance to me, and cards of admission will be issued. Early application for inclusion in either of the above courses should be made as the numbers admitted will be limited.

I am, Sir, yours faithfully,

R. J. FARMAN,
Secretary.

51, Chancery-lane, W.C. 2. April 11th, 1924.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Rear-Admiral F. J. A. Dalton is placed on the retd. list at his own request in order to facilitate the promotion of junior officers.

Surg. Comdrs.: W. T. Maydon, to the *Calliope* (on relief); J. C. Bringan, to the *Resolution;* and F. J. Gowans to the *President*, addl., for three months' post-graduate course.

Surg. Comdr. R. H. Atkins to the *Columbine*, addl. for Naval Base at Port Edgar as Senior Medical Officer and Medical Transport Officer.

Surg. Lt.-Comdrs.: M. B. Macleod to the *Victory XI.*, for R.N. Hospl., Portland, and as specialist in ophthalmology; R. A. Brown to the *Columbine*, for R.N. Hospl., S. Queensferry, and for specialist duties.

Surg. Lt.-Comdrs. to be Surg. Comdrs.: J. A. O'Flynn, J. P. Shorten, G. V. Hobbs, F. J. D. Twigg, and G. E. D. Ellis.

Surg. Lt.-Comdrs.: C. E. Greeson to the *Barham*, and A. C. Anderson to the *Victory*, addl. for R.N. Barracks, Portsmouth, and as temporary specialist in ophthalmology.

Surg. Lt. R. W. Nesbitt to be Surg. Lt.-Comdr.

J. F. Kirwan to be Surg. Lt.

Lt. A. D. Phillips to the *Dolphin*.

ROYAL NAVAL VOLUNTEER RESERVE.

N. N. Wade, late temp. Surg. Lt., R.N., is granted an honorary commission as Surg. Lt.-Comdr. in the Royal Naval Volunteer Reserve.

ROYAL ARMY MEDICAL CORPS.

Maj. J. H. Douglass retires on ret. pay.

Temp. Capt. W. Fletcher-Barrett relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

Capt. A. J. Brown, from Gen. Hosp. List, to be Maj. (Prov.).

Capt. J. M. Milne resigns his commn. and is granted the rank of Maj.

TERRITORIAL RESERVE OF OFFICERS.

Maj. J. R. Menzies, from the Active List, to be Maj.

TERRITORIAL DECORATIONS.

The King has conferred the Territorial Decoration upon the undermentioned officers: Lt.-Cols. R. E. Bickerton, J. W. Kemp, A. A. W. Merrick, and W. A. Thompson; A. A. Ross (deceased); Majs. E. W. Herrington, A. G. Lovett-Campbell, W. A. Valentine, H. F. Wilkin, and G. T. Willan.

Mr. H. D. Gillies has had conferred on him by the King of Denmark a Commandership of the Order of Dannebrog.

Obituary.

ALEXANDER HAIG, M.D. OXF., F.R.C.P. LOND.

WITH the death of Dr. Alexander Haig last week, at the age of 71, there has passed one whose name was a familiar association with a theory in medicine to which he devoted practically all his attention. Dr. Haig's views on uric acid as a factor in the incidence of gout, rheumatism, cancer, and general conditions of ill-health were at the time of their promulgation received with a considerable amount of scepticism by the profession, nor have subsequent researches by other investigators confirmed his conclusions. Yet, although his theories have been largely discredited, nevertheless, it cannot be doubted that his clear statements and strong belief in his own work have done much to stimulate further and wider research into the causes and ætiology of many diverse conditions with which the presence of uric acid is associated.

Dr. Alexander Haig was a son of the late George Andrew Haig, of Brechin, Forfarshire, and was born in 1853. He was educated at Harrow and at Exeter College, Oxford, and received his professional training at St. Bartholomew's Hospital and at the Rotunda Hospital, Dublin, qualifying as M.R.C.S. Eng. in 1879 and M.B. Oxf. the following year, when he also graduated M.A. His first appointment was as surgeon to the Torbay Hospital, but in 1882 he returned to London where he set up in practice, and also held the appointment of casualty physician to St. Bartholomew's Hospital. Later he obtained the post of physician to the Royal Waterloo Hospital for Children and Women, and physician to the Metropolitan Hospital, to both of which he was consultant physician at the time of his death. Dr. Haig's interest in the subject of uric acid began at an early stage in his career. In 1887 he contributed a paper to the Medico-Chirurgical Transactions on the relation of a certain form of headache to the excretion of uric acid, and his thesis for his M.D., which degree he obtained from Oxford in 1888, dealt with the formation and excretion of uric acid considered with reference to gout and allied diseases. These monographs were rapidly followed by others on the rôle of uric acid in the production of disease, which appeared in various medical journals, and the columns of THE LANCET contain much that originated from him. Among the books of which he was the author are "Uric Acid as a Factor in Causation of Disease," of which the seventh edition appeared in 1908, and his "Uric Acid, an epitome of the subject" reached its second edition in 1902. "Diet and Food in Relation to Strength, Power of Endurance, Training, and Athletics" ran through six editions. In it Dr. Haig stated a clear issue. His view reduced all men and women to mere automata, illustrating this simple principle—9 oz. of albumin per pound body-weight is the art of keeping perfect health.

In appreciation of him Dr. Arthur T. Davies writes:—

"My friendship with and recollections of Dr. Haig go back many years. He was first associated with me as one of the casualty physicians (1885–87) at St. Bartholomew's Hospital and then as one of the assistant physicians (1886) to the Metropolitan Hospital in its transitional days when it was being moved from Devonshire-square, Bishopsgate, to Kingsland-road, N. Haig was a man genial in nature and of high character and integrity. He always seemed to maintain an even mental equilibrium under adverse criticism. He took the keenest interest in his work and in developing his theory on uric acid, to which he devoted an immense amount of labour and research. He was led to start his theory from observing the effects of deleting red meats on his headaches. In a letter which he wrote in 1906 to me he said: 'Of late it has come into my mind that it was perhaps a greater duty to stay at the hospital and help the poor than to make more money by giving all my time to the rich.' Commenting on the break of associations (he is referring to my resignation as physician to the hospital), he said these changes are but the first of a series in which we must eventually part from everything even life itself and the lesson surely is that there are other and better things not subject to these changes. Haig was a most kind and loyal colleague ; his motto was ‘ once a colleague always a colleague.’ ”

Dr. Haig married in 1878 Gertrude Mary, daughter of the late James Haig, barrister, of Lincoln's Inn, and had one son and one daughter.

THOMAS PARKER POWELL, L.R.C.P. & S. Edin., L.R.F.P.S. Glasg.

The sudden death of Dr. T. P. Powell of Lincoln, occurred on March 29th while he was engaged on his professional duties, and by his death Lincoln has lost a well-known local practitioner. Born in 1861, Dr. Powell was the son of the late Mr. T. Wood Powell, a Breconshire analytical chemist. Choosing medicine as his profession, he proceeded to the Royal Colleges, Edinburgh, and the Anderson College, Glasgow, obtaining the triple qualification L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. in 1894. After qualifying he joined Dr. P. Thompson, of Retford, as assistant, and from there he accepted the appointment as senior medical officer to the Manchester Unity Order of Oddfellows Medical Institution, Lincoln. At that time the friendly societies' medical institutes were going through a difficult period of their history, and their relations with outside medical men were far from satisfactory. For 28 years Dr. Powell worked steadily on towards the realisation of his ambition to raise the standard of friendly society medical work. During the war he was medical officer to the Staffordshire Regiment and naval forces in Lincoln, and later a member of the Pensions Board. A man of few words and determined character, quick to take offence but equally quick to forgive, Dr. Powell held the confidence and affection not only of his patients, but of his medical brethren, by whom he is sincerely mourned.

DOUGLAS ARTHUR REID, M.D. Edin., M.R.C.S. Eng.

Dr. Douglas A. Reid, who died recently, at his residence in London, in his ninety-first year was for many years a prominent figure in the public life of Tenby, Wales. He was born at Portsea, Hampshire, and at the age of 16, in 1849, was apprenticed to Dr. James Henderson, the surgeon of Portsmouth Dockyard. A year later he entered at King's College, London, as a student, and in 1853 he proceeded to the University of Edinburgh, where he graduated as M.D. Returning to London, he passed the examination of the College of Surgeons and Apothecaries' Hall in June, 1854. Following a short residence at the Brompton Hospital for Consumption as clinical assistant, Dr. Reid entered the army as assistant surgeon at the outbreak of the Crimean War, and was gazetted to the 90th Light Infantry. Throughout the Siege of Sebastopol he was attached to that regiment and was frequently on duty in the trenches during the winter of 1855. He took part in the attack on the Redan on June 18th and in the storming of Sebastopol on Sept. 8th of the same year, and was subsequently awarded the Crimean Medal with the clasp for Sebastopol, and the Turkish Medal. In 1856 he returned to England, and leaving the service he commenced practice in Pembroke as the successor of Dr. Paynter, then the oldest practitioner in the town. In 1863 he established the Pembroke and Pembroke Dock Infirmary, and in 1866, during the cholera epidemic of that year, he was appointed by the Local Government Board as extra medical officer to the Pembroke Union to assist in coping with the epidemic. It is recorded that he had upwards of 200 cases in his charge in the course of six weeks and he succeeded in keeping the death roll below 10 per cent. In 1868 he was made a magistrate for the Borough of Pembroke, and from 1873 to 1875 was a member of the town council of the borough. From 1857 to 1874 he was a surgeon of the old Castlemartin Yeomanry Cavalry. Dr. Reid settled in Tenby in 1875, where he remained for nearly 40 years. For long a member of the town council, at the time of his death he was the senior justice of the peace for the borough. He had also been a trustee of the Tenby Charities and an Income-tax Commissioner.

For many years there were few important movements in the town in which he was not interested, and of his capabilities a correspondent writes as follows :—

“ Dr. Douglas Reid in his prime—and his prime extended to a much more advanced age than that of most men—was possessed of a boundless enthusiasm. Whatever he undertook was carried through with an energy that swept opposition off its feet, yet with an honesty of purpose that even his opponents were forced to admit and admire. He had a vivid sense of humour, a keen wit, and the power of ready repartee. Optimistic in outlook, he refused to see the dark side and the difficulties of life, and to the very end he was always seeking ‘ for some new thing,’ and some fresh cause for which to think and work. In addition to a lifelong interest in his profession, he threw himself with characteristic keenness into politics, being a whole-hearted supporter of the Conservative cause. As M.O.H. of the town in which he lived he was ever battling for the reform of abuses and the furtherance of its health and general interests, and it was owing largely to his untiring work that the first tuberculosis sanatorium in West Wales was instituted. The loss of his youngest and only surviving son, Sir Archibald Reid, early this year was a blow too severe for even his vigorous constitution, and the shock hastened his death.”

His wife died in 1912, but he is survived by three daughters, to whom we extend our sincere sympathy.

The late Dr. Q. M‘Lennan.—We regret to record the recent death of Dr. Quintin M‘Lennan at the age of 74, who for 40 years had practised in the West-end of Glasgow. He had been a visiting surgeon to the Royal Infirmary, Glasgow, and at the time of his death was the senior honorary consulting surgeon to that institution ; and he had also served on the surgical staff of the Royal Hospital for Sick Children. He was medical examiner to the Board of Trade. Dr. M‘Lennan took a great interest in the literature and music of his country.

The late Dr. A. J. Couper.—Dr. Alex. Johnston Couper, who died recently, graduated at Glasgow University in 1907, and acted for a time as a demonstrator of anatomy in the University. He then took up practice, and at the same time became attached to the surgical staff of the Royal Infirmary, Glasgow, where he was an assistant surgeon at the time of his death. During the war he served in Salonica with the Royal Army Medical Corps.

The late Dr. J. P. Williams.—The sudden death of John Prichard Williams, M.R.S.C., B.Ch., of Southgate-road, Potter's Bar, Middlesex, at the early age of 30, occurred as the result of appendicitis two weeks ago. Dr. Williams was educated at University College, Cardiff, and at Westminster Hospital, and received his medical degree in 1917. During the war he held the rank of Captain in the R.A.M.C., and from 1915 to 1917 he served with the British Expeditionary Force in Russia. Since 1920 Dr. Williams was in practice in Potter's Bar, and was a member of the honorary staff of Potter's Bar Cottage Hospital. To his widow and little daughter we extend our heartfelt sympathy.

The late Dr. J. S. Mackay.—John Sutherland Mackay, M.D., D.P.H. Ed., died in Edinburgh on March 30th, aged 77. He was the eldest son of the Manse at Lybster, Caithness, and studied at Aberdeen, Edinburgh, and St. Andrews, and after graduation took the appointment of medical officer to the Rio Tinto Copper Co., in Spain. He put the medical department of this great mine on lines which are retained to-day, conferring great benefits on the workmen and their families, for whose welfare he was an indefatigable worker. The Spanish Government recognised his labour during the cholera epidemic of 1885 by conferring on him the Cross of Isabel la Católica. After nine years in Spain he returned to Scotland, and after practising for some years in Kirkcaldy he was appointed medical officer of health for that borough. He is survived by his only daughter.

Medical Society for the Study of Venereal Diseases.—A paper on Bismuth Therapy will be read before the Society at 11, Chandos-street, W. 1, on April 25th, at 8.30 p.m., by Major A. T. Frost. A discussion will follow, in which Dr. H. H. Dale will take part, and preceding the discussion there will be a demonstration of clinical cases.

Medical News.

UNIVERSITY OF LONDON.—A lecture on the Influence of Tropical Climate on Man will be given at University College (Gower-street, W.C. 1), by Prof. Dr. C. Eijkman (professor of hygiene and microbiology in the University of Utrecht), at 5 P.M., on Friday, May 2nd. The chair will be taken by Prof. H. R. Kenwood. The lecture will be delivered in English, and admission is free.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful:—

DIPLOMA IN TROPICAL MEDICINE.

J. C. Carson, B. L. Chopra, M. J. Hardy, F. J. C. Johnstone, J. J. Keirans, G. Maclean, W. C. Mathur, and Elizabeth M. Theron.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At the Convocation held on March 29th the following degrees, diploma, and licence were conferred:—

Bachelor of Medicine and Bachelor of Surgery.—Sarah B. Allan, Robert B. Allen, Alfreda M. Beadle, Derek C. Bell, Edgar F. H. Bell, Robert L. Bell, Norman Capstaff, John B. S. Guy, James A. Hislop, Walter A. Hogg, James S. Johnson, Johannes Fredericus Van Wyk Krige, John H. Laydon, Laurence V. McNabb, George M. Miller, Hector C. Reed, Sydney D. Rowlands, Gerald F. Smith, Thomas E. Stoker, Phyllis M. Walker.
Bachelor of Hygiene.—Edward T. Colville.
Diploma in Public Health (*D.P.H.*)—Edward T. Colville.
Licence in Dental Surgery (*L.D.S.*)—Leslie T. D. Heppell.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council of the College, Sir John Bland-Sutton, President, in the chair, the Jacksonian Prize for the year 1923 was awarded to Mr. Harold R. Dew (Melbourne), and a certificate of honourable mention and an honorarium were awarded to Mr. John Howell Evans. The subject of the prize for 1925 is the Pathology and Treatment of Lymphadenoma (Hodgkin's Disease).—The John Tomes Prize for 1921–23 was awarded to Mr. W. Warwick James, O.B.E., Fellow and Licentiate in Dental Surgery of the College, for his scientific work on the eruption of teeth, orthodontics, and the pathology of dental caries.—Dr. Arthur Longley Whitehead, senior ophthalmic surgeon, General Infirmary, Leeds, and Dr. Arthur Robinson, professor of anatomy, University of Edinburgh, were elected Fellows of the College, under Section 5 of the Charter of 15 Vict., relating to members of 20 years' standing.—Miss Pera Rosaline Cecilia Crawford, of the London School of Medicine for Women, was appointed Begley Student for the ensuing three years.—Mr. James Sherren, C.B.E., was elected one of the two representatives of the College on the Senate of the University of London in the vacancy occasioned by the retirement of Mr. Raymond Johnson. The diploma of M.R.C.S. was conferred upon Paul H. T. Thorlaksson, M.D. Manitoba, and the licence in dental surgery was conferred upon Jacob H. Ingel, Middlesex and Royal Dental Hospitals.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The Fellowship of Medicine programme of special courses for the months of April–May includes courses in various specialties, as well as a two weeks' intensive course at the Hampstead General Hospital in association with the North-Western Fever Hospital and Paddington Green Children's Hospital. The programme covers all departments of clinical work and a formal lecture or lecture-demonstration every afternoon. A further fortnight's course will be held at the Hospital for Diseases of the Skin, Blackfriars, from April 28th to May 10th, comprising instruction in the out-patient department and venereal cliniques. From May 5th to 31st there will be a special course in ophthalmology at the Central London Ophthalmic Hospital, consisting of clinical lecture-demonstrations dealing with subjects of interest to general practitioners. A month's course in psychological medicine has been arranged at the Maudsley Hospital, Denmark Hill, from May 5th to 30th, and will consist of lecture-demonstrations on the psychoneuroses, practical aspects of mental deficiency, &c. A course in venereal diseases will be given at the London Lock Hospitals (Dean-street and Harrow-road) from May 5th to 31st, and will include clinical work daily in the wards and out-patient departments at both hospitals with a special lecture by a member of the staff at 91, Dean-street each day. A fortnight's course will be given at the Infants Hospital from May 12th to 24th. The programme deals with infants' diseases from all sides, and consists of clinical demonstrations, "round table" consultations, lectures, &c. From May 12th to 24th a course in proctology will be held at St. Mark's Hospital for Diseases of the Rectum. The course will include operations, demonstrations, and lectures by members of the staff. Also, from May 12th to 30th an intensive course in laryngology, rhinology, and otology will be held at the Central London Throat, Nose, and Ear Hospital. Clinical demonstrations, lectures, &c., will be given each day from 9.30 A.M. to 5 P.M., and for those desiring it an operative surgery class will be arranged for. There will be a special intensive course at the Prince of Wales's General Hospital, Tottenham, from May 19th to 31st, details of which will be announced later. Copies of the syllabus of each of the foregoing courses can be obtained on application to the Secretary to the Fellowship of Medicine, at 1, Wimpole-street, W. 1.

THE King has given permission to Dr. William Hastings, O.B.E., Deputy Director-General, Egyptian Government Health Service, licence and authority to wear decorations of the Order of the Nile (second class) which have been conferred upon him by the King of Egypt in recognition of valuable services rendered by him.

MANCHESTER RADIUM INSTITUTE.—The activities of this Institute are growing rapidly. During the past year 908 in-patients were treated, and the number of attendances by out-patients was 5729. The Institute is doing research work as well as practising curative treatment, and to aid in these an assistant radiologist, Dr. G. E. Birkett, has been appointed. The deficit in the annual working account for the past year was £1734. Effort is being made to secure a steady subscription.

ANCOATS HOSPITAL, MANCHESTER.—During the year the income of the hospital and convalescent home was £23,165 and the expenditure £24,766, with a deficit on the year's working of £1600. In 1922 there were 2307 in-patients, 8937 out-patients, and 18,912 accident cases. The cost per bed occupied per annum was £131 14*s.* Dr. A. E. Barclay formally opened the new X ray department, which, with certain structural alterations, cost £2500. The resident medical and surgical staff has been increased to five.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—A post-graduate course on Diseases of the Nervous System will be held at the hospital from May 5th to June 27th. The general course will consist of clinical lectures and demonstrations, teaching in the out-patient department, and pathological lectures and demonstrations. A course of clinical demonstrations, chiefly on Methods of Examination of the Nervous System, will be given, and a course of lectures on the Anatomy and Physiology of the Nervous System will be arranged if there are sufficient applicants. Further information may be obtained from the Secretary of the Medical School of the Hospital, Queen-square, London, W.C. 1.

BANTING RESEARCH FOUNDATION.—It is proposed to raise by public subscription in Canada and the United States a sum of at least £100,000 for the purpose of establishing a Foundation in recognition of the discovery and development of insulin therapy. The purposes of the Foundation are (1) to provide further funds for the support of the Banting and Best Chair of Medical Research at the University of Toronto; (2) to establish a fund for the adequate financial support of such scientific workers as may have proposed to undertake the investigation of definite problems of medical research, for whom funds are not otherwise available. Such assistance may be given to persons working in the University of Toronto or elsewhere. The trustees for the collection and expenditure of the fund are prominent members of the University of Toronto, the medical members including Dr. W. E. Gallie, Prof. J. G. Fitzgerald, and Prof. V. E. Henderson.

ST. ANDREW'S HOSPITAL.—The eleventh annual report of St. Andrew's Hospital, Dollis Hill, N.W., shows a steady increase in the work of caring for patients who, while not suitable subjects for free treatment in charitable institutions, are unable to meet the charges necessary to secure adequate medical or surgical treatment in private nursing homes. Patients are admitted to this hospital only on the recommendation of their own medical adviser. The needs of the institution are, however, great, for, apart from the cost of maintaining an increase of free beds, there is a debt of over £1000, while the extension of the X ray department, the establishment of an electrical department, and further accommodation for the nurses and domestic staff would add to the efficiency of an institution which already fulfils a very useful purpose. During the year under notice the number of patients treated was 540, as compared with 406 in 1922. There was also a considerable increase in the number of operations performed, and the average number of patients resident in the hospital also rose by 28 per cent. The total income was £6826 and the expenditure £6988.

Donations and Bequests.—By will the late Mr. Thomas Utley, of West Didsbury, Manchester, left among other bequests £200 each to the Manchester Northern Hospital for Women and Children, the Manchester Hospital for Consumption and Diseases of the Throat, St. Mary's Hospital for Diseases of Women and Children, and the Northern Counties Hospital for Incurables.—The late Sir George Wood Rhodes, of Pont-street, S.W., who left estate of the gross value of £342,363, with net personality £336,434, left the bulk of his property, failing issue of his children, to the Manchester Royal Infirmary; the Manchester Children's Hospital, Pendlebury; the Manchester and Salford Hospital for Skin Diseases; the Manchester Royal Eye Hospital; St. Mary's Hospital, Manchester; Henshaw's Blind Asylum, Old Trafford; the Royal Blind Pensions Society; Gardner's Trust for the Blind; and to the Hospital for Sick Children, Great Ormond-street; the Queen's Hospital for Children, Hackney-road; Charing Cross Hospital; Guy's Hospital; and St. George's Hospital, London.—Under the will of the late Sir Henry Lucy ("Toby M.P.") the testator left among other bequests the income of £3000 to be divided between the Parochial Nursing Fund, the Dispensary, and the local branch of the National Lifeboat Institution at Hythe; £1000 to the Salop Infirmary, to endow a cot in the name of "Henry Lucy"; £1000 to the School for the Indigent Blind, Liverpool, to endow a "Henry Lucy" cot "in memory of my grandfather for many years master of the school"; and £1000 to the Liverpool Northern Hospital to endow a bed "in the name of my mother, Margaret Kemp Lucy." To the Westminster Hospital the testator left £1000 to endow a bed in the name of Lady Lucy, and £1000 each (payable after the death of his wife) to the following institutions: Alexandra Hospital for Children, Bloomsbury; Royal Ear Hospital; Royal Eye Hospital; Seamen's Hospital Society; Royal Hospital for Children and Women, Waterloo Bridge-road; Royal Orthopædic Hospital; Central London Throat Hospital; East London Orphan Asylum; Liverpool Infirmary for Children; Children's Convalescent Home, West Kirby, Cheshire; Ragged School Union Holiday Homes for Poor Children, London; Belgrave Hospital for Children, London; Cancer Hospital, Fulham-road, London; Charing Cross Hospital; Chelsea Hospital for Women; City of London Hospital for Diseases of the Chest; East London Hospital for Children and Dispensary for Women; Evelina Hospital for Sick Children; Guy's Hospital; Hospital for Sick Children, Great Ormond-street, London; King's College Hospital; London Hospital; Metropolitan Hospital, London; Middlesex Hospital; North-Eastern Hospital for Children, London; North London Consumption Hospital; Poplar Hospital; Royal Free Hospital, London; St. Bartholomew's Hospital; St. George's Hospital, London; St. Mary's Hospital, Paddington, London; St. Thomas's Hospital, London; West London Hospital, Hammersmith-road, London; and Victoria Hospital for Children, Chelsea, for the endowment of cots or beds in the name of "Nancy Lucy." These institutions will also participate in the residue of the property.—The late Mr. F. C. Pilkington left by will £10,000 to the Convalescent Home, Stillorgan, co. Dublin.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, April 9th.

League of Nations Opium Conferences.

Mr. Lumley asked the Secretary of State for Foreign Affairs whether he was aware that the American Government had laid before the committee of preparation for the League of Nations Opium Conferences proposals providing that no State should rely on revenue from the production or sale of narcotic drugs except to finance the control of traffic in such narcotics; and whether it was the intention of His Majesty's Government to endorse this principle.—Mr. Ponsonby (Under-Secretary for Foreign Affairs) replied: I am informed that certain suggestions have been submitted to the committee of preparation by the United States representative for their consideration. It would be premature, and would prejudice the work of the committee, for H.M. Government to express any views with regard to these or any other proposals that may be put before the committee while they are still under the consideration of the committee.

Mr. Ayles asked the Prime Minister whether the committee appointed to prepare the agenda for the international opium conferences convened by the League of Nations had yet met; who was the British representative; and whether any statement could be made regarding the decisions taken.—Mr. R. MacDonald replied: The committee has met twice. The British representative on it is Sir Malcolm Delevingne, who represents H.M. Government on the opium advisory committee of the League of Nations. No decisions have yet been taken, but the committee will in due course submit a report to the League of Nations, by which it has been appointed.

The Spahlinger Treatment.

Mr. Smith-Carington asked the Minister of Health when the Spahlinger treatment would be available for ex-Service men who desired it.—Mr. Wheatley replied: I would refer the hon. Member to the reply which I gave on this subject on March 12th to Sir W. de Frece. When supplies of Mr. Spahlinger's remedies become available in this country it will be open to the medical officers responsible for the treatment of ex-Service men to utilise these remedies in the treatment of their patients if they consider it desirable.

Medical Reports to Board of Control.

Mr. Costello asked the Minister of Health if he would furnish particulars of the diagnosis sent in to the Lunacy Commissioners (as required by statute) within seven days after admission by the medical superintendents, in the case of the 22 sane persons mentioned in the last report of the Board of Control as having been wrongfully certified; would he procure from the Board the invalidation of the certifications and the removal of the names of these persons from the list of the certified; and would he state under what legal sanction their detention was continued for periods extending in some cases to as much as 50 days.—Mr. Wheatley replied: The Board of Control are not authorised to disclose the medical reports furnished to them by medical superintendents with regard to patients under their care. But I will supply the hon. Member with a statement showing the circumstances in which each of these cases was detained under observation. It is not possible to invalidate the certification of the persons mentioned; they were sent to the mental hospitals under proper legal authority (by order of a justice in 21 cases and by warrant of the Home Secretary in one case). Their names were, however, removed from the list of certified patients on discharge from the institutions. They were detained at the hospitals on the authority of the justices' orders and Home Secretary's warrant for periods of varying lengths to allow of special observation by the medical superintendents and further reports to the Board of Control.

Patients in Private Asylums.

Mr. Costello asked the Minister of Health what regulations, if any, had been made by the Board of Control to ensure that where no prejudicial certificate had been sent into them patients in private asylums who had not been seen by a magistrate should receive the statutory notice of their right of appeal to a judicial authority, and that when the manager of the institution had neglected his duty in this respect such neglect, which was described in the Act as a misdemeanour, should in future be followed by a prosecution of the offender.—Mr. Wheatley replied: No regulations are required, but the Board of Control have drawn the attention of the authorities of institutions receiving private patients to the requirements of Section 8 of the Lunacy Act, 1890. I do not consider that a prosecution should necessarily be undertaken in all cases of failure to observe the requirements referred to.

Mr. Costello asked the Minister of Health whether, in view of the declaration made by the Board of Control that they had been advised that neglect on the part of a medical superintendent to serve a private patient with notice of his right of appeal to a magistrate did not invalidate the reception order under which he was committed, he would take steps to enforce the right of a British subject to have his case heard and investigated by some judicial authority prior to imprisonment.—Mr. Wheatley replied: The point will no doubt be considered by the Royal Commission which it is proposed to appoint at an early date.

Danger of Proprietary and Patent Foods.

Mr. Dixey asked the Minister of Health whether he was aware of the serious danger to infant life and welfare arising from the widespread sale of proprietary and patent foods, consisting principally of starch; and whether he proposed to take any and what steps to enable local authorities to exercise control over the sale of unsuitable and unwholesome preparations advertised as infants' foods.—Mr. Wheatley replied: The matter has been the subject of investigation by my department, and I will consider what action it may be desirable and practicable to take in the direction which the hon. Member suggests.

Mr. HORE-BELISHA asked the Minister of Health what number of hours per day were worked by the asylum workers, inclusive of meal times; and whether he would arrange to bring these workers within the scope of a projected Eight Hours Bill.—Mr. WHEATLEY replied: There is no general rule, but the hours usually range from 48 to 60 per week. There is considerable difference of opinion among medical superintendents as to what hours are best for the patients and the nurses, and the subject is now under the consideration of a Departmental Committee appointed to consider the nursing service in county and borough mental hospitals, and in what directions it can be improved. I should prefer to await their report before answering the last part of the question.

Sickness Insurance Benefit.

Major EDMONDSON asked the Minister of Health whether, seeing that under the National Health Insurance Act only seven days' pay was granted for ten days' sickness, he would state why, in the case of sickness of such duration, the commencement of payment could not be dated from the first day of illness.—Mr. WHEATLEY replied: Under the Act sickness benefit is only payable from the fourth day of incapacity, but any approved society which is found on valuation to have a disposable surplus after making provision for the normal benefits to which its members are entitled, may out of such surplus provide, as an additional benefit, for the payment of sickness benefit from the first day of incapacity. Out of 6659 societies and branches in England which have a disposable surplus on the first valuation, only 66, however, elected to adopt this form of additional benefit. An increase of the weekly contribution would be necessary in order to place societies in a position to pay benefit from the first day otherwise than by recourse to their surplus funds.

After-care Colonies for Tuberculosis.

Mr. AYLES asked the Minister of Health whether he could give the number of after-care colonies for men and women who have been through sanatoria for tuberculosis now in existence; the number of cases which they had accommodated; and what the result of the establishment of such colonies had been.—Mr. WHEATLEY replied: There are at present three after-care colonies accommodating some 100 married men and their families, and 80 single men. I am aware also of two non-residential employment centres and one centre partly non-residential. I am advised that establishments of this kind must be regarded as still in the experimental stage, though the results so far obtained are hopeful.

Measles Statistics.

Mr. D. G. SOMERVILLE asked the Minister of Health the present percentage of cases of measles per thousand of the population; what was the percentage of similar cases in other countries which compiled statistics on the subject; and whether there was any explanation of the frequency of the malady in this country as compared with other countries.—Mr. WHEATLEY replied: No complete statistics are available as to the incidence of measles in this country, as the disease is no longer notifiable, except in a small number of districts, and the statistics available in regard to certain foreign countries in which the disease is notifiable do not enable me to give the figures asked for by the hon. Member. As regards the third part of the question, I may say that recent information indicates a somewhat widespread increase in the prevalence of measles in other European countries and the United States, as in this country.

Maternity Outfits.

Mr. AYLES asked the Minister of Health whether he would consider favourably any requests from health committees to be allowed to provide maternity outfits in necessitous cases.—Mr. WHEATLEY replied: I am prepared to consider any such applications.

Cost of Tuberculosis Treatment.

Mr. WILLIAM JOWITT asked the Minister of Health what was the total expenditure incurred by the Imperial Exchequer in the year 1923 upon the treatment of tuberculosis.—Mr. WHEATLEY replied: The total amount paid from the Exchequer during the financial year 1923–24 in respect of the tuberculosis schemes in England and Wales, including capital grants-in-aid of sanatoria, was £1,818,179. With regard to Scotland, a question should be addressed to the Secretary for Scotland.

Glandular Tuberculosis and Bovine Infection.

Mr. WILLIAM JOWITT asked the Minister of Health whether there were any statistics or other information available to his department to show the extent to which the prevalence of glandular tuberculosis was due to infection from bovine tuberculosis; and, if so, whether he would state the result of such statistics or information.—Mr. WHEATLEY replied: The most recent statistics on this subject of which I am aware are those published in 1922 as the result of a bacteriological examination of a number of cases of cervical gland tuberculosis undertaken on behalf of the Medical Research Council. These statistics showed that the percentage of cases due to bovine infection was highest in children under 5 years of age, and that although there was a progressive diminution in later age periods, the proportion of adult cases of bovine infection was not inconsiderable. It should, however, be stated that the number of children under 5 who were examined for the purposes of this test was comparatively small.

THURSDAY, APRIL 10TH.

Private Asylums in England.

Mr. PERCY HARRIS asked the Secretary of State for the Home Department how many asylums there were in England which were administered for private gain; the number of inmates in these asylums; and how many of the proprietors had degrees in psychological medicine.—Mr. GREENWOOD (Parliamentary Secretary to the Minister of Health) replied: There are 56 such institutions in England. On Jan. 1st, 1924, there were 170 voluntary boarders and 2797 certified patients resident. Information as to how many of the proprietors have degrees in psychological medicine is not available. My hon. friend is, no doubt, aware that the proprietors are not necessarily the licensees and need not be medical men.

FRIDAY, APRIL 11TH.

Summer Time Bill.

Sir KINGSLEY WOOD moved the second reading of the Summer Time Bill, a measure the main object of which, he said, was the permanent establishment of a six months' period of summer time from the first Sunday in April to the first Sunday in October. He claimed that opinion and propaganda in favour of permanent summer time had undoubtedly been growing during the eight years it had been in operation. This Bill would cost no money, but would rather save a great deal. He urged that it was very desirable that our own summer time should coincide with Continental summer time. Considerable objection had been raised on the ground that the health of the children would be affected. Nearly all the authorities who held that the Act was prejudicial to children took the view that this was due, not to any defect inherent in the Act itself, but to the fact that the parents did not use it rightly. On the assumption that parental control was effective the authorities responsible for the education of 4,000,000 elementary school-children would favour the Act and those responsible for only 500,000 would be against it. The British Medical Association were unanimously in favour of the proposal on the ground that it would do a great deal for the health of the community, including children.

Mr. A. HENDERSON (Cardiff), in seconding the motion for the second reading, said that he thought that the Bill would do a great deal towards increasing the sum total of happiness and enable the country to develop towards that stage when we might have an A1 nation.

Major COLFOX moved the following amendment: "That this House declines to proceed with a Bill which seeks to upset the compromise between all the interests concerned reached less than two years ago, and which would have a most prejudicial effect on the inhabitants of agricultural and mining districts."

Mr. DUFFY seconded the amendment.

Mr. R. DAVIES (Under-Secretary to the Home Office) said that this was a question for the House to decide, but in the view of the Home Office and the Government it was desirable that the Bill should be read a second time.

Mr. A. HENDERSON (Home Secretary) undertook on behalf of the Government that some of the points raised in the debate would be taken into consideration on the Committee stage.

On a division the second reading was carried by 169 votes to 129—majority, 40.

Women Medical Examiners in Criminal Cases.

The DUCHESS OF ATHOLL asked the Secretary for Scotland whether, with regard to women medical practitioners acting as medical examiners in certain criminal cases, he would state the names of the women practitioners whose services had been so utilised in Edinburgh and Glasgow, and the number of occasions since the issue of Lord Advocate Morison's letter in October, 1920, on which they had been employed in the courts of Edinburgh and Glasgow respectively.—Mr. ADAMSON replied: With regard to Glasgow, I am informed that three women medical practitioners who have been mainly employed in cases of the nature referred to are the late Dr. Mabel Jones, Dr. Elizabeth Smith, and Dr. Madeline Archibald. I regret that it is impossible to give particulars of the number of occasions on which their services have been utilised. With regard to Edinburgh, I find that owing to a misapprehension I was improperly informed when I answered the noble lady's question on Feb. 18th. I understand that in the case of post mortem inquiries the Procurator-Fiscal there has from time to time utilised the services of women practitioners, but that in cases of the kind specially mentioned in Lord Advocate Morrison's circular of October, 1920, women practitioners have not as yet been employed. I would point out, however, that, in general, in cases of assault or offence against the Criminal Law Amendment Acts it is necessary to have an immediate medical examination, which in practice has to be carried out on the instructions of the police by a police casualty surgeon. A further examination after the case is reported to the Procurator-Fiscal is rarely necessary.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Friday, April 25th.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)

Cases:

Dr. J. D. Rolleston: Herpes Recurrens.

Other cases will be shown.

Paper:

Dr. Forrest-Smith and Dr. Geoffrey Fildes: The X Ray Diagnosis of Pyloric and Duodenal Stenosis in Infants, to be followed by a discussion, in which Dr. Bertram Shires and others will take part.

Members of the Section of Electro-Therapeutics are specially invited to attend and to take part in the discussion.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.

Paper.

Dr. Louis W. Sambon: The Elucidation of Cancer.

N.B.—It is hoped that Members of other Sections will attend this Meeting.

ELECTRO-THERAPEUTICS: at 8.30 P.M.

Paper:

Prof. Stefan Jellinek (Vienna): Some New Observations and Experiments in Electricity.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, April 25th.—8.30 P.M. A paper will be read by Major A. T. Frost on Bismuth Therapy. A discussion will follow in which Dr. H. H. Dale will take part. The discussion will be preceded by a demonstration of Clinical Cases.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, April 21st.—College closed.

TUESDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Department.

WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Pernet: Skin Department. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. MacDonald: Genito-Urinary Department.

FRIDAY.—11 A.M., Dr. McDougal: Electrical Department. 2 P.M., Dr. Burrell: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—9.30 P.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily 10 A.M. to 6 P.M., Saturdays 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE. (Prince of Wales's General Hospital.)

(at 4.30 P.M.)

TUESDAY, April 22nd.—Dr. L. R. Yealland: Clinical Demonstration of Cases.

WEDNESDAY.—Dr. J. Browning Alexander: Asthma.

THURSDAY.—Mr. J. Bright Banister: Injuries Sustained in Labour.

FRIDAY.—4 P.M., Mr. J. Howell Evans: Orchitis and Epididymitis.

Appointments.

BRUCE, G. GORDON, M.B., Ch.B., L.R.C.P. Lond., F.R.C.S. Eng., has been appointed Honorary Assistant Surgeon to Royal Aberdeen Hospital for Sick Children.

BUCKNELL, M. ASTON C., M.B., B.S. Lond., M.R.C.S., L.R.C.P., D.P.H., Bacteriologist for the City of Bradford.

FOULKES, P. G., M.B., B.S. Lond., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for King's Lynn.

YOUNG, ROY F., M.B., B.C. Camb., Visiting Surgeon to the Western Infirmary, Glasgow.

Edinburgh Royal Infirmary: THOMPSON, MABEL, M.B., Ch.B., non-Resident House Physician; WILLIAMSON, A. B., M.B., Ch.B., BENNETT, MARGARET, E., M.B., Ch.B., non-Resident House Surgeons; MITCHELL, BETTY, M.B., Ch.B., MUNRO, J. E., MARGARET, M.B., Ch.B., and POPPER, O. O., M.B., Ch.B., Clinical Assistants.

Vacancies.

For further information refer to the advertisement columns.

Birmingham City.—Asst. M.O. £750. Also M.O. for Maternity and Child Welfare Work. £600.

Bradford City.—Asst. School M.O. £600.

Croydon County Borough.—Dental S. £600.

Gravesend Hospital.—Sen. H.S. £100.

Hemel Hempstead. West Herts Hospital.—Res. M.O. £200.

Hospital for Consumption and Dis. of Chest, Brompton, S.W.—Asst. in Dept. of Pathology. £250.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—H.P. £100.

Leicester Royal Infirmary.—Second H.P. £125.

London Lock Hospital, Dean-street and Harrow-road.—Surg. Reg.

London Temperance Hospital, Hampstead-road, N.W.—Med. Registrar. 40 guineas.

Manchester, County Mental Hospital, Prestwich.—A.M.O. £440 17s.

Mid-Wales Counties Mental Hospital, Talgarth, Breconshire.—Asst. M.O. £350.

R.A.M.C. Territorial Army.—Young Med. Practitioners.

Rochester, St. Bartholomew's Hospital.—Res. H.S. £250.

Sutton, Surrey, Downs Hospital for Children.—Second Asst. M.O., £560.

West London Hospital, Hammersmith-road, W.—Hon. Med. Reg.

Westminster Hospital.—Surg. Reg. and Med. Reg. Each £150.

Whitelands Training College, Chelsea, S.W.—M.O.

Births, Marriages, and Deaths.

BIRTHS.

MALHOTRA.—On March 15th, at Philip's Nursing Home, Lahore the wife of Captain R. C. Malhotra, I.M.S., of a daughter.

MARRIAGES.

MANN—GOULD.—On April 10th, at St. Mary's Baptist Church, Norwich, Surgeon-Commander Fairman Rackham Mann, R.N., to Hilda Mary, younger daughter of H. P. Gould, of Saxlingham, near Norwich.

DEATHS.

COCK.—On April 6th, suddenly, at Morton-crescent, Exmouth, John Cock, M.R.C.S., L.R.C.P., aged 68.

HAIG.—On April 6th, at Inverness-terrace, London, Alexander Haig, M.A. and M.D. Oxf., F.R.C.P.

JACKSON.—On April 5th, at Folkestone, Edward Jackson, L.R.C.P., M.R.C.S., late of Darlington, aged 78.

LONG.—On Wednesday, April 9th, at St. Martin's-place, Dover, John Reginald Long, M.R.C.S., L.R.C.P., D.P.H. Oxf., Barrister-at-Law, aged 53 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

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Notes, Comments, and Abstracts.

THE LIFE AND DOCTRINE OF SIR EDWIN CHADWICK.[1]

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PART I.

WHEN invited by your Provost to speak at University College on Sir Edwin Chadwick, his life and work, the attractiveness of the subject chosen and the appropriateness of the *locus in quo* overcame my sense of conscious ineptitude for the graciously allotted task. As chairman, for the time being, of the Trust which bears the name of Chadwick and seeks eponomously to perpetuate his memory and his doctrine, I have dutifully attempted, on more than one occasion, to relate to audiences less august than this the story of his chequered career, whereby he earned the hatred and hostility of many of his contemporaries, the gratitude and veneration of posterity, and his final canonisation as the Father of British Sanitary Science.

As secretary to, and disciple of, Jeremy Bentham, in the later years of the utilitarian sage, Sir Edwin Chadwick, like his master, is intimately associated with this place. Bentham, for whose mortal remains your museum has been a mausoleum and whose counterfeit presentment has recently been enshrined in fresco within your dome, was one of the remarkable group of men who in the 'twenties and 'thirties of last century strove to found a University of London. The great philosopher bequeathed his library in part to this College and in part to Chadwick, while under the Trust established by the latter your professorship of hygiene has received substantial support and appropriately cherishes his memory.

Sir Edwin Chadwick belonged to the noble army of eminent Victorians, whose times and tendencies it is now the fashion to belittle and besmirch, though his early activities in association with Bentham, Grote, and the Mills, father and son, commenced some years before the accession of Queen Victoria. When that reign began, as Sir John Simon truly observes, "there existed hardly a glimmer of intelligent public interest in matters affecting the public health. The changes that came in quick succession during the following decade (1838-1848) were," according to the same eloquent chronicler of English sanitary institutions, "directly due to the zealous labours of one eminent public servant, Sir Edwin Chadwick." The younger Mill, writing in 1835, lamented at that time the aridity of English contemporary thought—"its lack of interest in the great problems of man's life and nature . . . . the nature and principles of human society and the history of philosophy of civilisation."

Even the Radical Benthamite creed, which J. S. Mill and his father did so much to promulgate, while seeking to raise the lot of the worker and urging the physical betterment of mankind, was nevertheless not deeply concerned with such metaphysical problems as the origin of life or the cognate question of the intimate pathology of contagion. Content with improving the material well-being of man as the potent panacea for all physical, mental, and moral ills, it discounted the theologians' ascription of pestilences to the intervention of the Infinitely Great, and dismissed as of small account the microscopists' assertion of the pathogenicity of the Infinitely Little. Happiness was their goal, physical well-being the means, and filth the enemy to be vanquished by personal and municipal cleanliness.

Chadwick's Part in the Rise of Sanitary Science.

The nineteenth century, which gave us Pasteur and Lister and the dawn of bacteriology, had yet earlier witnessed the birth, or perhaps one should say the *renaissance*, of sanitary science, as expounded by Chadwick and his co-workers. While laboratory investigators were claiming to identify one after another the vegetal or animal parasites proclaimed as the causes of zymotic and other diseases, the municipal engineer, the sanitary officers, local administrators, and social workers had been preaching the gospel of cleanly living, improving water-supplies and refuse removal, bettering the housing of the working classes, and claiming that to such efforts were due the reduction in the death-rate and the restriction or extinction of pestilences. These filth diseases, they said, would vanish before the application of what Chadwick had promulgated as his "sanitary idea."

Apart from minor matters, mostly of ephemeral interest, Chadwick's teaching is not without its message for us to-day. Some at any rate of our modern sanitarians and sociologists seem to lack the very qualities in which Chadwick was pre-eminent. They have not the massive grasp, the many-sided method of approach, the hold on totality which he so conspicuously possessed. The modern tendency to over-specialise, to carry on research in water-tight compartments, to hunt the little game, to restrict environment to laboratory limitations instead of ranging free o'er all the field of man, to over-accentuate the microscopic, or shall we say the ultra-microscopic, to "tithe the mint and anise and cummin," and omit the weightier matters included in, but not exhausted by, the word "environment" were no part of the moral outlook or mental outfit of Edwin Chadwick. Even Sir Benjamin Ward Richardson, who had so much in common with his hero, alike in heart and head, found Chadwick's personality defiant of ordinary classification and not easy to analyse—"he treated" he said, "all professions with equal freedom, when any subject connected with his own pursuits was under discussion; so that they who listened often wondered, when they were not intimate with him, what his own profession might be."

It was fortunate, indeed, that in the evening of his long life Chadwick found in Richardson, my old friend and colleague, a biographer after his own heart, who under his hero's eye made a worthy record of his varied beneficent activities. In 1887 Richardson published in two volumes "The Health of Nations," a review of the work of Edwin Chadwick with a biographical dissertation. Titularly, the work is reminiscent of, and perhaps conceived as a palinode upon, that other work, its predecessor by more than a century, so much talked of and so little read, "The Wealth of Nations" by Adam Smith. Each is significant of the century to which it belonged. The economics of health arrived upon the scene later than the economics of wealth, and it is perhaps the destiny of twentieth-century legislators and administrators to harmonise the competing claims of the one upon the other. Articles, reviews, reports, memoranda, blue-books flowed in rapid succession for three score years from the facile pen of Edwin Chadwick, and it is well to take down, dust, and re-peruse them, and to reflect on them in the light of twentieth-century sanitary and social science. No one can rise from that task without a vivid impression of their sanity of judgment, their modernity and presage, their large and liberal outlook, their insight and foresight, as well as of the breadth of view and the humanity of the philosophy which inspires them.

"The historian" says Richardson, "will feel no doubt that in this man some peculiar interest was embodied: that the man did some work or works which exerted a striking influence over his time, and caused great changes in its social system; and yet there will be a haze about him which will be scarcely penetrable. The man did and did not. He made laws? Yes. Was he then a legislator? No, not even a member out of office in the lower House. He did something for sanitary improvements? Yes. Was he then a doctor? No, on the contrary, he looked on them as necessary evils, and as not very likely to last." He would, indeed, have been staggered if he had lived to see the day when a State Medical Service was almost on the cards; while his amiable anticipation that "doctors were not very likely to last" was presumably based upon a too roseate expectation of the early advent of an epoch when, thanks to the realisation of his sanitary ideals, doctors would neither be able to live—nor die.

Chadwick's Early Life and Environment.

Chadwick's long life of 90 years spanned the nineteenth century with the exception of its concluding decade. He and the century were in their teens together, for he was born at Longsight, near Manchester, on Jan. 24th, 1800. His times, up-bringing and early associations combined to mould this Lancashire lad into the indomitable and indefatigable social and sanitary reformer for which occasion was so ripe. Ancestry also doubtless played its part in predestinating and fashioning this earnest apostle of "environment." From his grandfather Andrew, who lived to be 96, the friend of John Wesley, he derived, besides a title to longevity, something of the spirit of "the new philanthropy," as Green called it, which sprang from the Methodist revival, and with which the labours of John Howard, Wilberforce, and Samuel Romilly were instinct. From his father, the tutor of John Dalton, he inherited a love of natural history and philosophy, as well as a leaning towards Liberal views and literary pursuit. His mother he "lost too early for the frequent tear," and before he was ten years old he migrated with his father to London, whither the latter had been called to fill the editorial chair of the *Statesman*, a leading Liberal paper of that time.

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[1] A lecture delivered at University College, London.

In London young Chadwick devoted himself to the study of modern languages; he attended no public school except preparatory ones at Longsight and Stockport, and entered for the Bar at the Inner Temple; but with his father's example before him, journalism claimed his early attention. While still a law student he wrote for the *Morning Herald*, the *London Review*, and the *Westminster*, then the vigorous organ of the philosophic Radicals, the Mills, father and son, and Bentham. Articles from Chadwick's pen on "Life Assurance" and "Public Charities in France" stressed the potency of environment on health, and exhibited in embryo his "sanitary idea," which afterwards germinated and developed. An essay on "Preventive Police" attracted especially the attention of Bentham, secured his patronage and friendship, and introduced him into the brilliant circle of the devoted disciples who surrounded the utilitarian philosopher in his closing years.

Bentham, who was born in 1748, three years after the death of Walpole, died the day before the Great Reform Bill of 1832 received the Royal Assent. His personality and doctrine made a deep impression on his contemporaries; his breadth of view and prodigious range of knowledge commanded the veneration and homage of his co-workers and have left their mark alike on morals and on legislation. He had been in early life the friend of Adam Smith, the Wesleys, Mirabeau, and William Pitt; later James Mill, Samuel Romilly, and Etienne Dumont were his comrades and disciples, while in the evening of his life Chadwick and Dr. Southwood Smith resided with him at his hermitage at Queen's-gate, Westminster, and acted as secretaries during the last three years of the octogenarian sage. The subsequent careers of these two notable men afforded indubitable evidence that they had been with Bentham. Southwood Smith it was who performed the quaint last rites when in strict accord with the Master's directions he delivered a funeral *éloge* over Bentham's dissected corpse in the West Street School of Anatomy, amid an awful thunderstorm. Chadwick, less acquiescent, had declined Bentham's offer of an assured income if he would become the propagandist of the utilitarian philosophy. However, besides a share of his library, the Master bequeathed him a legacy. Chadwick had no doubt acquired from Bentham a breadth of view and basic notions of a juridical system which powerfully fomented within him the forces of his developing personality. Before he was 30 he had already become possessed of, or rather possessed by, his "sanitary idea" which his sympathetic biographer Richardson thus defined or described—"It was, that man could, by getting at first principles, and by aiming at causes which affect health, mould life altogether into its natural cast, and beat what had hitherto been accepted as fate by getting behind fate itself, and suppressing the forces which led up to it at their prime source."

The Beginning of his Life's Work.

He proceeded to study typhus fever amid the rookeries of East London and nearly fell a victim to it. He became intimate with John Stuart Mill, and it is said laid unsuccessful siege to the heart and hand of his sister Harriet. Mill introduced him to Nassau William Senior, and through him in 1832 he received the appointment of Assistant Commissioner for the inquiry into the Poor-law which Lord Grey's Government had just resolved to initiate under the chairmanship of the learned and large-hearted Bishop Blomfield. From the vantage ground of this relatively subordinate position Chadwick was started on what was destined to be his life's work. Duty and faculty were united in the enterprise. All sources of information were, with alacrity, pressed into the service of the inquiry. He made investigations on the spot, he saw with his eyes and not with his ears; he indited questionnaires. His reports became models of what sanitary surveys ought to be, and statistical detail and argument formed a conspicuous element in the case he presented to the Commission to which he was later added as a member. Their report disclosed the abuses which had grown up under Acts which purported to amend, but more often had marred, the principles of Poor-law codified in the celebrated 43rd of Elizabeth (1601) c. 2, which put into statutory form what was previously common law practice. It appeared that many justices of their own sweet will ordered relief to any who applied to them independently of the parochial overseers and vestries, and later had purported to fix scales of wages according to the price of wheat and the number in family. The arbitrary law of settlement, denounced by Adam Smith and Burke, continued to tie the labourer to the soil; the burden of rates had become intolerable; pauperism had increased by leaps and bounds, and in the distressful times of the first quarter of last century some £7,000,000 a year were being squandered by 16,500 local authorities in manufacturing able-bodied paupers, without check or guidance from any central authority. The report of the Commissioners, issued in February, 1834, mainly drafted by Chadwick, though claimed by some as the work of Senior, is described by Mr. Fowler in his volume on "the Poor-law" as "perhaps the most remarkable and startling document to be found in the whole range of English, perhaps, indeed, of all, social history." It recommended the formation of a central board to control administration and to prescribe uniform regulations as to relief, while local unions of parishes were to provide workhouses, administer relief, educate and apprentice children, levy rates, appoint paid officers, and render uniform accounts, under central supervision. Relief to able-bodied paupers was to be declared illegal. The law of settlement was to be relaxed. The "principles" of that report, and of the Poor-law Amendment Act of 1834, which speedily followed it, are often referred to, but are not easily disentangled from the copious volumes of the one or the numerous sections of the other. Those principles, alike in the ideals to be aimed at and the machinery to be employed, have been endorsed by the Royal Commission on the Poor-laws which reported in 1909. That Commission reasserted the fundamental principle of the Poor-law Amendment Act of 1834 to be "that the situation of the able-bodied pauper should be, really or apparently, less eligible than that of the independent labourer of the lowest class." The epitomised version of that formula—viz., "the workhouse test"—was, however, never approved or adopted by Chadwick. As regards machinery, 16,500 parishes were consolidated into 660 unions employing some 17,000 paid officers and working under the control of a central board of three Commissioners. The eleemosynary duties of the overseers and justices passed into innocuous desuetude; wasteful expenditure was checked and rates were accordingly reduced.

Paving the Way.

The first three Commissioners, with Chadwick as their most energetic secretary, at once proceeded by rules and orders to regulate outdoor relief, to make proper classification of the infirm, the aged, the destitute, the lunatic, the children, and the vagrant, and to prescribe their respective appropriate treatment—in modern phraseology "to break up the Poor-law." In 1847 the original Commission was dissolved and replaced by a new body including ex-officio Ministers of the Crown, and thus came to be represented in Parliament. In 1849 it became the Poor-law Board, and in 1871 the Local Government Board, whose recent extinction led to the Ministry of Health in 1919.

Chadwick had, indeed, adumbrated the appointment of a Minister of Health and a Minister of Education more than 50 years ago, though it may perhaps be doubted whether he would have been altogether satisfied with those departments as we have them to-day.

The first Commissioners under the Poor-law Act of 1834 were Sir Thomas Frankland Lewis, J. G. Shaw-Lefevre, and Sir George Nicholls, who received £2000 a year each, while their secretary, Chadwick, received little more than half that sum and did more than three-quarters of the work. Lewis and Shaw-Lefevre gave tepid support only to their secretary, and Nicholls was soon despatched to Ireland. Later on Sir Francis Head and Sir George Cornwall Lewis replaced the first Commissioners and acute internal dissensions rent the Board. Lewis developed a bitter antipathy to Chadwick and in 1845 matters came to a crisis over a squabble in connexion with the Andover Workhouse. A committee, of which Disraeli was a member, was appointed to inquire into the affair by the Commons, against the wish of the Government, and reported in vindication of Chadwick and against the Commissioners, who accordingly resigned in 1847. The Press had, from the first, teemed with criticism of the Board—they were "the three Kings of Somerset House"—"the Pinch-pauper triumvirate," while Chadwick was held up to obloquy by the *Times* as "that juvenile theorist of 34—the Sucking Solon of the Benthamite creed." Other work was nevertheless soon found for his indomitable energy. Even while working on the report of the Poor-law Commission and for the Board as secretary he had undertaken other investigations. In 1833 the grim tragedy of juvenile labour in factories had, by a single vote in the Commons, been referred to a Commission, for which the earlier efforts of Sir Robert Peel, the full-blooded denunciations of Richard Oastler, and the sober arguments of Mr. Sadler had prepared the ground. Thomas Tooke, Southwood Smith, and Chadwick were the Commission, and with alacrity they inquired and reported.

Legislation, however, lingered, since the Lords resented what they described as an insidious attempt to introduce by a side-wind universal national education. The half-time system, of which Chadwick was the proud parent, the ten-hours day, the institution of Government Factory Inspectors, and the recognition that injuries of employees were a legitimate charge on an industry, may be regarded as the early or the later fruit of the Commission of 1833.

A Practical Idealist.

In 1834 a committee was appointed, amid derisive levity in the Commons, to investigate the causes of intemperance, under the chairmanship of Mr. J. Silk Buckingham. Chadwick gave evidence before it, declaring that intemperance produced pauperism, and that outdoor relief went largely to the gin-shops, the number of which was grossly excessive. He advocated the provision of playgrounds, the opening of museums and art galleries on Sundays, the encouragement of coffee taverns, and the substitution of light wines for strong alcoholic drinks. In 1838 Chadwick was one of a Commission of three to devise the establishment of a constabulary police force. His colleagues were Sir Charles Rowan and Sir Charles Shaw Lefevre, afterwards Speaker and later Lord Eversley. "Preventive Police," as I have said, had been the subject of a suggestive article by Chadwick in 1829, the year in which Sir Robert Peel's Police Act reformed the London Service and gave us "Peelers" or "Bobbies" in place of the old Charlies of the Dogberry type. Chadwick insisted upon certainty of punishment, rather than its severity, as preventive of crime. He stressed the perils of hoarding and the prudence of banking money. He preferred police to military for preventing and suppressing riots, and in a report to the Society of Arts in 1876 he urged the employment of the police in the extinction of fires. Almost his last essay was one stressing the value of the cycle in facilitating the mobility of the police.

In the first year of Queen Victoria's reign, through Chadwick's inspiration and Lord Lyndhurst's influence, civil registration of births, marriages, and deaths was enacted despite the opposition of churchmen and dissenters, who appeared to regard the reform with much the same repugnance as secular education. It was also at his suggestion that Dr. William Farr (1807-1883), the author of "Vital Statistics" in McCulloch's "British Empire," was appointed compiler of abstracts in the office of the Registrar-General. For 40 years he held that subordinate post and was eminently qualified for appointment to the higher position when it fell vacant in 1879, but political patronage decided otherwise. It is impossible to over-estimate the value and far-reaching effects of Farr's work; by accurate and comparative death-rates, general, infantile, and zymotic, he provided a standard and measure of the influence of those very sanitary measures which his friend Chadwick was so vigorously preaching and practising. The influence was world-wide, and in the language of figures Farr's work speaks in every national and local health report that sees the light to-day.

The year 1839 witnesses the registration of Chadwick's own marriage to Miss Rachel Kennedy, of Manchester; and he transferred his residence from Orme-square, Bayswater, to Stanhope-street, Hyde Park.

Sanitary Reform.

It was from the Poor-law Board of Commissioners, or rather from the brains of their indomitable secretary, that the first Sanitary Commission emanated in 1838, which led up to the great "inquiry into the sanitary condition of the labouring population of Great Britain" of 1842, with which his name is identified, and on which his reputation as a sanitary reformer largely rests. When an epidemic of fever ravaged Whitechapel and Bethnal Green in 1838 he had set Dr. James Kay and Dr. Neil Arnott to report "on the prevalence of certain physical causes of fever in the Metropolis," and Dr. Southwood Smith to investigate personally "the removal by sanitary regulations of the physical causes of sickness and mortality" in some 20 metropolitan unions. It was their reports which induced Lord John Russell to secure the issue of an order by the Queen for a larger inquiry, to cover the whole of England and Wales. The report of 1842, admittedly Chadwick's work, though not bearing his name, has become a classic in the history of British sanitary science.

Modern students of public health would find it difficult to visualise the social misery and mal-hygiene which prevailed among the masses of the people at that date. As Simon points out, when Queen Victoria came to the throne, apart from the futile Quarantine Laws, and an annual vote to the Vaccine Board, the Central Government had nothing to say in regard to the public health, and local authorities had but the most indefinite relation to it. Medicine was now summoned to the service of the State, and the engineer and architect to the aid of the municipality. The first great cholera epidemic which struck Great Britain in 1831 had caused a rude awakening, and served to draw attention to the conditions under which the poor lived and died in large urban communities. The Lords of the Council had indeed in that year issued rules and regulations similar to those drafted by Mead in 1720 and promulgated a form of prayer to be used throughout the land. They also set up provisionally a central board, vested with such sanctions as Orders in Council under the Quarantine Acts could confer, which later were hastily endorsed by temporary statutes. It was not, however, until the Chadwick régime that the potency of filth in air, water, food, soil, and surroundings became recognised in preparing the breeding-ground for epidemics, and sanitary neglect began to be denounced as the nurse, if not the parent, of contagious fevers.

Chadwick's monumental "Survey into the Sanitary Condition of the Labouring Classes of Great Britain" was the final blow to the "letting-things-alone" party in high places, and led to the institution of local medical officers of health. When he and his colleagues visited the fever-stricken homes of the poorest in our large cities, he said, "it was frequently declared by the inmates that they had never for many years witnessed the approach or presence of persons of that condition near them." "The duty of visiting loathsome abodes, amidst close atmospheres compounded of smoke and offensive odours, and everything revolting to the senses is a duty" he said, "which can only be expected to be regularly performed under much stronger motives than can commonly be imposed on honorary officers . . . The descriptions given by Howard of the worst prisons he visited in England (which, he states, were the worst he had seen in Europe) were exceeded in every wynd in Edinburgh and Glasgow inspected by Dr. Arnott and myself in company with the municipal officers of those cities. More filth, worse physical suffering, and moral disorder than Howard describes as affecting the prisoners, are to be found amongst the cellar population of the working people of Liverpool, Manchester, or Leeds, and in large portions of the metropolis." Deaths from fever and small-pox were, he found, almost exclusively confined to the worst parts of the towns. In an epidemic of the latter in Bath in 1837, which carried off over three hundred persons, scarcely a single gentleman and only two or three tradesmen were among the victims. He claimed that by knowing the general lie of a town and the conditions of its poorer dwelling houses, he could postulate the habitat and haunts of infectious diseases. He believed in the common origin of zymotics in sanitary neglect—"that small-pox follows on much the same lines as typhus, so does scarlatina, but with wider deviations as to classes of cases and conditions of persons." Sutherland and Galton, he added, had shown that in Malta plague, cholera, small-pox, and anthrax had in different years been localised in the same squalid quarters. The propagation of fever he traced largely to untrapped drains; and the use of efficient traps and glazed earthenware self-cleansing pipes was early advocated by Chadwick. He had been brought up in the belief that epidemics were largely "climatorial" in causation, but he emphasised the fact that they were "largely communicable by infection." He urged the prompt isolation of infected persons in a well-ventilated chamber, so as to "let a current of air pass through the room and over the patient; to observe all the details of regulations as to cleanliness of the patient and the articles of clothing and furniture, and the removal of excreta." He enunciated precise rules for the sanitary construction of dwellings and hospitals, laying special stress on ample cubic space to get rid of "vitiated, phthisis-producing air, and (if the crowding is intense) fever-producing air." Personal cleanliness as a prophylactic against infectious disease was also accentuated. He said, "If a great epidemic were to occur again, I would proclaim and enforce the active application of soap and water as a preventive. I have had frequent opportunities of observing this plan as a factor of sanitation," and he proceeded to cite examples.

Chadwick's Conclusions.

After a careful examination of the enormous amount of evidence which he had collected, Chadwick thus summed up his conclusion of the whole matter: "That the various forms of epidemic, endemic, and other diseases are caused or aggravated, or propagated, chiefly amongst the labouring classes by atmospheric impurities produced by decomposing animal and vegetable substances, by damp and filth, and close and overcrowded dwellings . . . That such disease, whenever its attacks are frequent, is always found in connexion with the physical circumstances above specified, and that when these circumstances are removed by drainage, proper cleansing, better ventilation, and other means of diminishing atmospheric impurity, the frequency and intensity of such disease are abated, and where the removal of the noxious agencies appears to be complete, such disease almost entirely disappears. That cases of small-pox, of typhus, and of others of the ordinary epidemic occur in the greatest proportion in common conditions of foul air, from stagnant putrefaction, from bad house drainage, from sewers of deposit, from excrement-sodden sites, from filthy street surfaces, from impure water, and from overcrowding in private houses and in public institutions. That the entire removal of such conditions by complete sanitation and by improved dwellings is the effectual preventive of diseases of these species, and of ordinary, as well as of extraordinary, epidemic visitations. That when such diseases continue to occur their spread is best prevented by the separation of the unaffected from the affected, by home treatment if possible, if not, by providing small temporary accommodation; in either case obviating the necessity of removing the sick to a distance, and the danger of aggregating epidemic cases in large hospitals, a proceeding liable to augment the death-rates during epidemics."

Chadwick saw the urgent need of a radical reform in our local government system before any real advance on the lines he desiderated could be made. He urged the unification of local government services, especially in the metropolis, and he laid it down as a "sanitary axiom that the duty of carrying fouled water *out* of houses and *out* of towns, clear of the sites, constantly through self-cleansing channels, should, with the duty of carrying water *into* houses, devolve upon one and the same authority, and that such authority should be a competent and responsible public one."

The Municipal Corporation Act of 1835 was innocent of any sanitary intention, no duties or powers in regard to housing were conferred on local authorities for another 20 years, and the country at large waited till the 'seventies for urgently needed public health legislation, although certain towns, such as Liverpool, under private Acts, had appointed medical officers of health in the 'forties of last century. It was indeed through the Poor-law and especially its Central Board that sanitary reforms were then promoted, in default of available municipal authorities, especially in rural districts.

Although Chadwick's three-volume report was published in 1842, it was not until confirmed by the Health of Towns Royal Commission in its two reports of 1844 and 1845, and after two ineffectual attempts at legislation in 1846 and 1847, that the Public Health Act of 1848 and the Nuisances Removal and Diseases Prevention Act of the same year reached the Statute-book.

In 1847, after the dissolution of the first Poor-law Board, Chadwick had been placed on a Royal Commission to inquire into the sanitary condition of London. It exposed the lack of unity in metropolitan administration, with its seven different Commissions of Sewers and 100 different paving authorities, its competitive water-supplies from unfiltered river water, purveyed by profit-earning companies on the intermittent system, its open or stagnant sewers, and innumerable cesspools.

The Public Health Act of 1848 was adoptive only, did not apply to London, and was limited in duration (unless renewed) to a period of five years, nor did it give effect to all that Chadwick desired, but it nevertheless for the time being stabilised and strengthened the General Board of Health with Earl Shaftesbury (at that time Lord Ashley) as unpaid chairman, and Chadwick, and later Southwood Smith, as its paid members. It was efficient, economical, assiduous. It applied strong action and stimuli from headquarters to lethargic local authorities and, proceeding by provisional orders rather than by private Bills, it gave umbrage to Parliamentary agents whose emoluments were thereby reduced. Walter of the *Times* renewed hostilities and opposed the metropolitan works of the Board in association with the Commission of Sewers. Hudson, the railway king, and Toulmin Smith and Joseph Hume joined in the game of baiting the Board and chastising Chadwick as the chief offender. The cry of "Centralisation" was raised, the dictatorial edicts and doctrinaire policy of the Board were denounced by the "practical men" who were content that sleeping dogs should be permitted to lie and sanitary neglect continue as ever of old. Lords Shaftesbury and Carlisle, and in the Commons Lord John Russell, endeavoured to shield Chadwick from his traducers. To him were attributed all the sinister designs of the Board against self-complacent Bumbledom and the sturdy apologists of "the wisdom of our ancestors." The wags declared that under the Chadwick régime "it was a perpetual Saturday night when Master John Bull was scrubbed and rubbed and small tooth-combed till tears ran down his cheeks, his teeth chattered and his fists were clenched with worry and pain." Matters came to a crisis in the summer of 1854, when all the disaffected interests became vocal in the Commons, and on July 31st a combined attack on the proposal to renew the Act of 1848, with its General Board of Health, resulted in the defeat of the Government by nine votes in a small House at a morning sitting.

Chadwick Deposed.

The old Board of Health was thus knocked on the head, a new Ministerial body replaced it and paved the way for variations in policy, while Chadwick at the age of 54 was relegated to private life on a pension of £1000 a year. In their final report to Lord Palmerston the Board presented their apologia, and no impartial reader of it at this distance of time can fail to appreciate the immense impetus given to sanitary reform in the quinquennium 1848-54 by Shaftesbury, Chadwick, and Southwood Smith.

Shaftesbury, in his diary, records his chagrin at "being turned off like a piece of old lumber. Such is public service! Some years hence, if we are remembered, justice may be done to us, but not in our lifetime." There was much jubilation amongst the triumphant reactionaries—they said "England wants to be clean, but not to be cleaned by Chadwick," and the *Times* wrote "Æsculapius and Chiron, in the forms of Mr. Chadwick and Dr. Southwood Smith, have been deposed and we prefer to take our chance of cholera and the rest than be bullied into health."

Sir John Simon, who became medical officer of the new Board in 1855, and who introduced a different school of thought and pathological doctrine, nevertheless writing 40 years afterwards tells how Chadwick, who merited the reformer's crown of laurels, became the best abused man of his time. He admits that he may not have been richly endowed with Pitt's sovereign virtue of patience, but he duly adds "patience under sufferings of one's own, and patience towards the sufferings of others, are not equal measures of magnanimity. Mr. Chadwick, beyond any man of his time, knew what large fresh additions of human misery were accruing day by day under the then almost universal prevalence of sanitary neglect; and the indignation which he was entitled to feel at the spectacle of so much needless human suffering, is a not ignoble excuse for such signs of over-eagerness as he may have shown . . . To him this nation unquestionably owes that our statesmen of those times were first awakened to the duty of caring for the public health, and that the first of our modern legislative endeavours were made to bring health under the protection of the Law." Simon testifies to Chadwick's "unique relations to the beginnings of British sanitary reform," and records his unfailing respect for him as "first leader in so great a cause."

(*To be concluded.*)

A SAFE LITTLE HEATING LAMP.

WE have received from Messrs. Ahlmann (London), Ltd., of 9, Phœnix-place, London, W.C. 1, a little lamp, rather larger than a pocket match-box, provided with the new solid safety fuel known as "Meta fuel," which has, we are told, been submitted to severe tests in many countries and under all sorts of conditions. It was used by the Amundsen Expedition to the North Pole and by the Mount Everest Expedition in 1922. The latter reported, "You have only to put a match to the dry, white bars or cylinders and they burn without any trouble and smokelessly, even at 23,000 feet, for not less than 40 minutes." The fuel meets the need for a small-scale combustible which can be carried about without danger of fire or explosion. It is recommended by the makers for travelling, camping out, and picnicking parties, and the lamps would certainly be useful in the nursery and sick room. Such a heater might find a place in the kit of the surgeon or bed-side pathologist. A small heater (roughly the equivalent of a 2-oz. spirit lamp) costs 7*s.* 9*d.*, packets of fuel being supplied at 1*s.* for 20 bars.

A WARNING.

To the Editor of THE LANCET.

SIR,—On March 17th a man came to this hospital and said he had met with a motor-cycle accident. He gave his name as John Bland Sutton, aged 28 years, and stated he was a medical practitioner, and a nephew of a noted London surgeon (not Sir John Bland-Sutton). In view of this he was given preferential treatment and the use of a private ward. After being under observation for 10 days it was found to be an imposture, further the man attempted to leave the hospital unobserved.

I bring this matter to your notice that other hospitals may be forewarned.

I am, Sir, yours faithfully,

E. M. PORTER,

Secretary, Nelson Hospital for Wimbledon,
April 5th, 1924. Merton, and District.

Corrigendum.—Dr. J. C. McVail writes to point out that in his article on Small-pox and Vaccination, published in last week's LANCET, a sentence in the second column of p. 769 should read: "Sanitation having taken 10 years to reduce the rate from 6 to 5·3 per cent., suddenly, in a period of weeks or months, reduced it to 1·3."

Surgeon Rear-Admiral (retd.) would like full or part-time employment, where long medical and administrative experience is needed.—Reply, Editor of THE LANCET, marked "Private."

An Address

ON

CARDIAC EFFICIENCY.

Delivered before the Sheffield Medico-Chirurgical Society

By JONATHAN MEAKINS, M.D., F.R.C.P. Edin.,
CHRISTISON PROFESSOR OF THERAPEUTICS, UNIVERSITY OF EDINBURGH.

Probably one of the most important functions of the living organism, taken as a whole, is that depending upon the cardio-vascular system. Although this in many ways is subservient to the nervous system, yet its proper function has a most important influence on the nervous regulation and in so far as life is concerned may be even the more important. Through the circulation of the blood the tissues are supplied with practically all their needs. To them the blood takes oxygen, carbohydrates, fats, amino-acids, and removes carbon dioxide and other products of metabolism. Of all the substances which the circulation supplies to the tissues the most urgently important is oxygen, for the simple reason that there is no local store of this substance, and in order that energy may be produced it must be provided in a sufficient quantity.

Factors in the Maintenance of Circulation.

The circulation of blood is maintained by the combined efficiency of the cardiac and vascular mechanisms. The heart during systole ejects into the aorta and main vascular tree a certain quantity of blood which raises the pressure to such an extent that with competency of the aortic valves and the functionating vascular system it is carried to the capillaries, where the interchange of vital substances between the blood and the cells takes place. It is therefore essential that the heart must have the capacity to eject blood at a sufficient rate to supply the tissues with their needs. Probably the most important factor in this is the regularity of the cardiac rhythm and the presence of a healthy myocardium. If arrhythmia occurs, irregular cardiac output results. But probably as important a factor in the maintenance of circulation is the presence of an efficient vascular tone. A pronounced constriction of the arterioles leads to a great increase in the cardiac work and frequently to deficiency of circulation through the capillaries. On the other hand, a very much dilated vascular periphery may diminish the pressure in the general vascular system and contribute to a gross diminution in the volume of blood returning to the heart for further circulation.

In order that the needs of the organism may be supplied under great variations of rest and work functional flexibility of the circulation is necessary. Therefore the heart and vascular system must have a considerable power of reserve. If it be taken that the cardiac output per beat is constant, an increased circulation is only possible by an increase of the rate of the cardiac systole. If, on the other hand, it be taken that the resting or basal systolic output is not the maximum, but with an increased demand the systolic output is larger than at rest, the same increase of rate would not be necessary. It has been found that in certain apparently normal individuals the increase of rate is the main factor in increasing the amount of blood circulated per minute.[2] In others there is not only an increased rate, but also an increased output per systole.[1] In the former it has been found that they have a greater capacity of oxygen utilisation,[2] and, therefore, that the tissues can perform their functions with a lower partial pressure of oxygen in the capillary blood. This, however, does not necessarily indicate that at rest the systolic contraction is incomplete in either of these respects. It might probably indicate that the diastolic relaxation in some is greater than in others.

Effect of Increased Work on Size of Normal Heart.

It has been debated as to what occurs in regard to the size of the normal heart on increased work. It has been demonstrated[3 4] that in individuals with a relatively great power for work (whether it be required through an increased demand or through the heart labouring under disadvantageous circumstances, such as high altitudes) the cardiac outline becomes definitely smaller under such demands, while in those with a relative physical debility the shadow does not decrease appreciably. The question now arises as to whether this orthodiagraphic area is indicative of the size of the heart during systole or diastole. To those who are accustomed to estimate the cardiac shadow it is quite apparent that the area which is most obvious, either by ortho-diagraphic means or X ray, is the average area which occurs with complete systole. The diastolic area is very hazy and is only determined with great difficulty and inexactitude. It may therefore be concluded that the heart at the end of complete systole is smaller than usual in those individuals who are capable of performing heavy muscular work, either under normal or abnormal circumstances. It cannot, however, be presumed that this would necessitate a relatively greater capacity at complete diastole. The question therefore resolves itself into a discussion as to whether increased cardiac efficiency is accomplished by an increased systolic output and an increase of rate or by an increase of rate alone. As yet there is not sufficient data to decide this point in so far as the average normal person is concerned.

It has been shown in the normal individual that there is a direct relationship between the minute volume of the circulation and the general oxygen consumption per minute. Although this ratio may not necessarily be the same in different individuals, it maintains a more or less definite relation in the same person from time to time, other conditions being equal.

Cardiac Inefficiency.

Cardio-vascular deficiency may be said to develop when through circulatory disturbances an adequate supply of oxygen is not supplied in proportion to the needs of the organism. This in the first instance may be due not directly to a cardiac inefficiency, but to a great decrease in the vascular tone. The first and a very early effect in such cases will be a deficient return of blood to the heart, irrespective of the cardiac output. The end-result, however, will be the same as that resulting from failure of cardiac output. Whether the deficiency begins in the heart itself or in the vascular system, the first defect which the system feels is a deficiency of an adequate supply of oxygen. It will make a more concrete picture if we consider the question of cardiac function irrespective of the disturbance of vascular tone. The causes of cardiac inefficiency may be broadly divided into three classes—namely, (1) valvular lesions, (2) myocardial inefficiencies, (3) rhythmic disturbances.

1. *Valvular Lesions.*—The valvular lesions may be divided into two broad classes—those which interfere with the free onward propulsion of the blood-stream and those which allow of a certain amount of regurgitation. The conditions in the right heart which lead to either of these are either congenital in origin or are secondary lesions of the left heart. In so far as regurgitations are concerned, unless they be rather gross, an efficient myocardium may accommodate itself by hypertrophy and enlargement of the cavities to overcome the deficiency which results from such regurgitation of blood from either the aorta into the left ventricle or from the left ventricle into the auricle. Individuals suffering from such a lesion may be able to accomplish considerable work without any untoward symptoms. On the other hand, an interference with the onward flow of blood caused by a stenosis of either the mitral or the aortic orifices may lead to considerable physical incapacity. The cases of uncomplicated aortic stenosis are so rare that as yet no observations are

available. It might be supposed that in mitral stenosis the flow of blood from the auricle to the ventricle, both during systole and diastole, would be grossly impeded. The ratio between the amount of blood which enters the ventricle during diastole and that which is expelled during the auricular systole is not known. On taking the capacity of the two cavities into consideration it would be suggested that a considerable amount of blood flows into the ventricle during the diastole. This normal flow would probably be impeded by a mitral stenosis in proportion to the degree of the narrowing. In addition the auricle during its systole would likewise be handicapped in emptying its contents in a forward direction. The end-result would probably be a decreased flow of blood from the auricle to the ventricle in each cardiac cycle. This is corroborated by the manner in which the ventricle hypertrophies, although its cavity becomes smaller. The final proof is found in the fact that the output per systole in cases of mitral stenosis is conspicuously below the normal amount.[5] This decrease of the ventricular output may be so great as to necessitate, even at rest, an increase in the cardiac rhythm. It would appear that the normal resting individual has a greater circulation-rate than the needs of the moment require. This reserve is apparently provided to meet the immediate but comparatively slight demands which the ordinary movements of quiet life require. In the cases of mitral stenosis, however, where this reserve is being constantly used or exceeded, the slightest increase of work demands an increase of circulation relatively much greater than in the normal person. Therefore, the cardiac-rate must immediately and abnormally increase. The ventricular output per beat would most probably remain constant, and there is evidence which suggests that it may become smaller.

2. *Myocardial Deficiency.*—Of much more importance than the mechanical interference which valvular lesions may afford to the healthy myocardium is the question of myocardial efficiency. Any condition which interferes with the proper blood-supply to the myocardium or contributes to a degeneration of the muscle would probably produce a deficiency of circulation. A proper blood-supply may not be available for two reasons. In the first place it may be that the quality of the blood is abnormal, but normal in quantity, or secondly, that a normal quality of blood is deficient in quantity. In the first instance the arterial blood may be deficient in oxygen, as occurs in pneumonia, coal-gas poisoning, laryngeal obstruction, emphysema, anæmia, &c. This condition is especially harmful if it be produced acutely. In such cases one of the most essential constituents of the blood is deficient, and as a consequence the myocardium is greatly handicapped in performing its work. If this abnormal condition of affairs persists signs of cardio-vascular failure will develop, as it seems impossible for the myocardium to continue to functionate adequately without a generous supply of oxygen. As myocardial failure develops on account of the poor quality of the blood the quantity of the blood circulated will also become less and so a vicious circle will be established. This must be remedied by increasing the oxygen saturation of the arterial blood or else fatal cardiac failure will ensue. Secondly, if for any reason the vascular supply to the myocardium be interfered with—either through decrease in aortic pressure preventing the coronary arteries from acquiring their full pressure of blood, or through a stenosis or obliteration of the coronary orifices or the main branches—signs of cardiac embarrassment will be evident. If this deficiency of blood-supply primarily affects the myocardium and not the other tissues as well, the first signs of interference with function will be referred to the heart alone, and will be manifested by the characteristic syndrome commonly called angina pectoris. It must be recognised, however, that there is a relationship between the amount of cardiac work demanded by the organism and that which the heart may accomplish without alarmingly exceeding its own maximum blood-supply.

3. *Rhythmic Disturbances.*—When there are gross disturbances of cardiac rhythm, such as paroxysmal tachycardia and auricular flutter and fibrillation, a conspicuous decrease in the circulation-rate per minute occurs. In paroxysmal tachycardia where there is a complete auricular systole corresponding to each abnormal and rapid auricular excitation wave, it has been shown by Barcroft and his colleagues[6] that there is a very prompt and conspicuous fall in the circulation-rate per minute. This may probably be accounted for by the decrease in the period of auricular diastole, and by a compensatory protection on the part of the peripheral circulation. However, the exact mechanism of this decrease is not as yet quite clear. In auricular flutter, on the other hand, where there is apparently no complete auricular systole, and the ventricle is supplied with blood only during its own diastole, through a matter of gravity, the ventricular output will depend upon the amount which enters the ventricle during such a period. If the ventricular rate be 150 per minute, the period of systole will amount to 45 seconds and the period of diastole to 15 seconds; therefore, out of every minute the ventricle can only be filled with blood during 15 seconds. If, on the other hand, the ventricular rate be 75 per minute the period of systole will only occupy 22·5 seconds, and consequently during 37·5 seconds the ventricle will be filling with blood.* Under such circumstances the minute output of the ventricle would be conspicuously increased, in fact would practically return to the normal resting volume. On exercise, however, the rate would be apt to increase immediately to 150 per minute. There would be some gradation according to the peripheral demand, and as the auricle does not empty itself completely the circulation-rate would again depend upon the period of ventricular diastolic relaxation. A similar state of affairs occurs in auricular fibrillation, although in this condition the various factors are accentuated. It is a well-known fact that muscular activity is much more efficient if it occurs in a definite and regularly rhythmic fashion. In auricular fibrillation with a rapid ventricular-rate this is known not to occur. The ventricle may contract many times without an adequate blood-content, and the rate under such conditions affords no indication as to the volume of the circulation-rate; in fact, it may be taken to be an inverse ratio. In all of these conditions of rapid ventricular action due to abnormal excitation, the myocardium as well as the general organism suffers from a deficient circulation, and furthermore, the delicate gradation between demand and supply is completely upset. In cases of bradycardia, such as those due to complete heart-block, which are, as a rule, associated with a myocardial lesion, the cardiac output per minute, provided that there is no valvular or serious myocardial lesion, would be quite adequate for the resting organism. If, however, on account of exertion there be a demand for an increased blood-supply by the general organism, the ventricle being unable to increase its rate beyond its inherent rhythm, an augmented blood-flow could not be provided, except by increasing the output per beat. However, it seems apparent from the investigations which have been made up to date that the blood-supply under resting conditions in cases of heart-block is greater than required, and as this lesion, as a rule, occurs in elderly people where the demand for an increased blood-supply is limited on account of their diminished capacity for work, the deleterious results are not so obvious as in younger people.

Symptoms of Impaired Cardio-vascular Function.

The symptoms of impaired cardio-vascular function are very diverse. If the lesion primarily produces a deficiency of blood-supply to the myocardium, or if the myocardium be grossly damaged through bacterial or other intoxication, the symptoms will centre about this organ. The functional effect of such lesions may vary greatly. In those cases where there is a pronounced interference with the myocardial circulation, very incapacitating symptoms develop, and sudden death may ensue. On the other hand, when the cardiac debility is the result of a myocardial intoxication, limitation of effort is much more graded, and the individual is warned to circumscribe his effort, before serious myocardial embarrassment occurs.

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* These times are only approximate.

The quantity and quality of the blood-supply and the condition of the myocardium must be considered with reference to the amount of work which may be demanded at the moment. For example, in an individual aged 45 with coronary sclerosis and deficiency of myocardial blood-supply, the amount of work which they would expect to accomplish in an ordinary existence may be much in excess of that which the myocardium is in a position to accommodate. If such individuals rigidly restrict their effort they may continue without any symptoms, and after 10–20 years, when their general capacity for physical exertion is decreased, they may be able to do all the efforts ordinary to their age without symptoms. In other words, their condition has been reduced to a simple equation between demand and supply. If the demand be small enough, and the supply adequate, then the individual will be free of symptoms. If, however, there is a progressive decrease in the demand in proportion to a progressive decrease in the supply, the relationship will remain unchanged.

The acute cardiac symptoms occur in their most aggravated form as a result of diminished vascular supply to the myocardium. But they may also appear with scarcely less acuteness if the cardiac muscle be degenerated from other causes, from a bacterial invasion as in rheumatic fever, or from a specific toxin, as in diphtheria. It must be realised, however, that in all these latter conditions the general muscular and glandular system may also suffer, and, therefore, the general fitness for exertion may be conspicuously diminished. Under these circumstances the same urgency for an increased blood-supply may not be operative. This is well exemplified in cases of pronounced anæmia. Not only is the oxygen-supply to the myocardium diminished, but there is an oxygen-want in muscles, glands, and central nervous system. Therefore, when the individual attempts any physical or mental exertion the tissues supplied by the peripheral circulation suffer first, and as the myocardium is the primary recipient of an adequate blood-supply, provided the coronary system is normal, the symptoms are usually apparent in the periphery before cardiac distress is evident. Likewise, in those cases where the blood-supply to the myocardium is comparatively efficient, but the general circulation is impaired due to a diminished circulation-rate per minute, signs of peripheral disturbance are first obvious. These will primarily occur on exertion. One of the most important is dyspnœa. As the general blood-supply is deficient, the circulation through the periphery becomes decreased. There is therefore a local decrease in the partial pressure of oxygen and a relative increase in the carbon dioxide and other products of metabolism. Such a condition of affairs will have a distinctly disturbing effect upon the peripheral tissues. Those which require the greatest supply of oxygen will suffer first, as, for instance, the central nervous system, and the respiratory centre will probably manifest the first symptoms of distress. The result will be an increased pulmonary ventilation which will bring about a lowering of the carbon dioxide content of the arterial blood, and an attempt to increase the oxygen saturation. If in spite of the symptoms the effort be carried further, fatigue, exhaustion, and even unconsciousness may result. It is quite obvious that these developments are merely comparative, as it is common knowledge that the best of athletes, if they push their physical endeavour beyond their circulatory capacity, may develop syncope.

WIDENING RANGE OF CIRCULATORY IMPAIRMENT.

If the circulatory inefficiency be so extreme as to be manifest even at rest, more widespread and obvious symptoms develop. There is evidence to indicate that the more important parts of the organisms, such as the central nervous system, the kidneys, the liver, and the gastro-intestinal tract, are so placed that they may obtain an adequate blood-supply to the detriment of the skeletal structures. Therefore, when the body is completely at rest these systems may carry on their work without obvious symptoms, while the subcutaneous tissues and the muscles, particularly in the dependent parts of the body, may be very inadequately supplied with blood, and the circulation-rate through them be reduced to the lowest limit. As a result local asphyxia occurs in the most peripheral structures. As the decrease in circulation-rate progresses, the range of this circulatory impairment increases, and eventually the kidneys manifest their lack of adequate blood- and oxygen-supply by decreased function, as shown by a diminished flow of urine. In the meantime the circulation through the lungs may become so slowed that exudate of fluid occurs. This now produces a vicious circle. Such exudate or œdema interferes with the oxygenation of the arterial blood, which in turn reduces the supply of oxygen to the vital organs. As a consequence there develops a further and progressive decrease in the efficiency of the myocardium and the function of the other organs even at rest, with the occurrence of dyspnœa and orthopnœa, gastric distress, &c.

It has often seemed a paradox that as the cardiac dullness enlarges the evidence of circulatory failure may increase. We have found in these cases that there is a decreased circulation and also a conspicuous decrease in the output of the heart per beat in spite of the enlargement of the cardiac area. This can only be explained on the presumption that although the capacity of the ventricle is increased the completeness of the ventricular systolic contraction is diminished. Therefore, although the capacity of the left ventricle may be 150 c.cm. the systolic contraction may expel only 40 or 50 c.cm., thus leaving a residue of some 100 or 110 c.cm. of blood in the ventricular cavity.

We have further been able to demonstrate that if a relatively excessive demand for cardiac work be persisted in, the cardiac area may either remain in this dilated condition or may still further increase, and the systolic output progressively become less. This will occur whether the myocardium be the site of a chronic degenerative lesion or be suffering from an acute infection as so frequently occurs in acute rheumatic fever.

Increased Demand and Progressive Decrease of Functional Power.

There would appear to be a general law applicable to all functionating tissues of the body. It may be briefly stated as follows: if an organ be performing its work with difficulty, a gradual deterioration will occur if this increased demand be persisted in. On the contrary, if the work demanded of a diseased organ be less than its capacity at the moment a certain degree of restoration of function will ensue. This is exemplified in the recovery of function by the islands of Langerhans in diabetes mellitus if they be given a rest through decreasing of carbohydrate in the food, and also in cases of locomotor ataxia, when, after a period of physical rest, re-education may be undertaken, provided fatigue be not induced. If, however, an increased demand be continued, a progressive decrease in functional power will be evident.

This, therefore, points to one of the cardinal principles in the treatment of cardiac deficiency. When the myocardium is suffering from any abnormal blood-supply or mechanical handicap, and shows signs of failing under the burden, it should be placed as near as possible in an absolutely resting condition, in order that it may have an opportunity of regaining some of its lost reserve.

I would like to take this opportunity to plead for a more organised and systematic handling of acute cardiac disease in children. If we cannot as yet prevent its occurrence, can we not do more to investigate the disabilities which handicap these little sufferers from the very threshold of their lives? I am convinced that much can be done to prevent the progress of functional deterioration in this crippling and fatal disease.

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4. Barcroft, Binger, et al: Phil. Trans. Roy. Soc., 1922, cxi., 351.
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Lumleian Lectures

ON THE CLINICAL FEATURES OF FOREIGN BODIES IN THE BRONCHI.

Delivered before the Royal College of Physicians of London

BY THOMAS McCRAE, M.D., F.R.C.P. LOND.,
PROFESSOR OF MEDICINE, THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

LECTURE III.

Delivered on April 10th, 1924.

DIAGNOSIS.

THE first essential is a knowledge of the condition which should be considered in every case of respiratory tract disease which shows unusual features and, one may add, in some cases which seem to show no unusual features. So long as we regard a foreign body in the trachea or in a bronchus as a curiosity which is not likely to come under personal observation the diagnosis is not likely to be made. The *history* is most important if there is anything in it to suggest the possibility of a foreign body, but no weight should be given to a negative history. It is pathetic to find how often the patient suggested the possibility of something having gained entrance to the respiratory tract, only to have ridicule cast on the idea or to be told that it was impossible. Children have insisted that they had "swallowed" an object only to be laughed at. In some cases many years later the truth of the statement was proved. It is a common happening to choke when eating or drinking and nothing much is thought of it. The aspiration of a foreign body may cause nothing more and the disturbance may be so slight that no attention is given to it. Unless the distress is very severe a child is not likely to report it. It is surprising in the histories to find how often it was known that an object had been in the mouth and disappeared. The usual course of events is to infer that it was swallowed, and even if the stools were examined and nothing found, the incident is regarded as closed. How this can be done when the object which disappeared was an intubation tube, a tack, a staple, or a paper fastener is difficult to understand. Some people must have a great deal of the desire to hope for the best under all circumstances.

The *symptomless interval*, perhaps after some initial symptoms, which is common with inorganic foreign bodies, has played a large part in the errors in diagnosis. It may persist for days, weeks, or months, and the later symptoms are not regarded as having any association with the suspicious symptoms at the time of aspiration. The cases in which a tooth gained entrance while the patient was under anæsthesia offer a good example. The patient may make no complaint after coming out of the anæsthetic, and a cough, perhaps slight, is not regarded as of any special significance.

The occurrence of acute features, such as chills and fever with a rapid pulse and respiration-rate, often leads to a diagnosis of "influenza" or pneumonia, or perhaps, if they are not severe, to a diagnosis of bronchitis. It is remarkable how often the diagnosis of "pneumonia" appears in the histories. In the more chronic conditions if a lower lobe bronchus is obstructed the diagnosis of empyema is frequent. Pulmonary tuberculosis has been a common diagnosis, although one would suppose that the absence of tubercle bacilli might arouse doubt as to its correctness. It is interesting to note that pulmonary tuberculosis was found in only one of Dr. Jackson's patients with a foreign body in the air passages. If abscess or bronchiectasis has resulted these may be recognised, but the causal factor is not determined.

We have seen an interesting development as a result of the increased knowledge of bronchial foreign bodies—namely, that more and more suspicious cases are being sent to the clinic. Many of them present very difficult problems and require a period of observation before an opinion can be given. In the majority there is a possibility that a small piece of a nut may have been aspirated. A very small portion of a nut may excite inflammation but may not give sufficient signs to justify an immediate diagnosis. Fortunately, in these cases the size of the particle is such that there is no extensive blocking, and in the majority it seems to be expelled with the secretions sooner or later.

These doubtful problems are usually found in young children, and a common history is that the child while eating nuts suddenly choked and coughed. Following this there may be some cough and probably fever. The child does not seem very ill and the physical signs are about as follows. There is decreased expansion on one side, usually in the lower thorax, which may not be very marked. In the lower axilla of the affected side there is slight dullness, and on auscultation the breath sounds are distant with perhaps a few râles. The X ray study may not show any decided change in the lung, or the shadow of the lower part of the lung may have a slightly increased density. These signs may persist for some weeks and gradually disappear. Our inference in these cases is that a small particle has gained entrance to the bronchus and set up a local inflammation. With increase in secretion and the expulsion of this by vigorous coughing the foreign material is usually expelled. In some cases there may be a number of small particles. One point of interest in these cases is that the dullness is in the lower axilla and not in the lower back as a rule. In none of these cases has the question of pneumonia caused any difficulty.

It is best to discuss the diagnosis of certain groups, the members of which show considerable similarity. The need of frequent examinations in puzzling cases must be mentioned again. The signs are often so variable that much aid comes from this fact, especially in the diagnosis from pneumonia and empyema. In the cases in which the signs are definite and remain unchanged there is rarely much doubt.

Acute Cases.

These are usually due to foreign bodies of a vegetable nature, such as a nut, pea, or bean, and the clinical picture produced is distinctive to a considerable degree. Prompt diagnosis is usually necessary to save life. Emphasis must be laid on the severe character of the symptoms. The children are often desperately ill with high fever (often 104° to 106° F.), a rapid pulse-rate (140 to 180), a rapid respiration-rate (40 to 80), and evidence of marked toxæmia. In the more severe cases the dyspnœa is extreme, with marked cyanosis, and the struggle for breath is pitiful to witness. In some cases the toxæmia is so marked that the child makes little or no effort to cough. In milder cases the distress is less but any movement or exertion brings on severe dyspnœa, strangling cough, and cyanosis. If there is marked secretion, as is the rule, there may be great difficulty in bringing it up and frequent ineffectual paroxysms of cough occur. This picture is that of one drowning in his own secretions. The picture may be of maximum severity with the foreign body in the trachea or in a bronchus. In either case the intense tracheo-bronchitis, which is excited and appears so quickly, probably has more to do with the symptoms than the mechanical effects of the foreign body unless it is in the trachea.

There is often the picture of *obstructive emphysema*, which is very deceptive when first seen, so much so that it is easy to mistake the side which is involved. With the lung over-distended with air, that side of the thorax is full but shows no movement, in strong contrast to the other side which shows an extreme degree of movement. The percussion note shows varying degrees of hyper-resonance or tympany, and if the condition has existed for some days there is usually some dullness below, especially in the axilla and adjoining back, probably due largely to secretion. The heart is moved towards the unaffected side. If the foreign body blocks one lobe only—usually a lower lobe or the right lower and middle lobes—the signs are less general; with a longer duration the air is absorbed, varying degrees of collapse occur, or the lung becomes filled with secretion.

The diseases for which this condition is most likely to be mistaken are diphtheria and pneumonia. The former error is shown by the number of patients who come with a history of diphtheria antitoxin having being administered. A large proportion of all foreign body cases—and especially those with vegetable foreign bodies—come with a *history* of a diagnosis of pneumonia and often of repeated attacks. It may be said that the writer has not seen an instance of lobar or broncho-pneumonia with a foreign body, and in no case has the diagnosis of pneumonia had to be seriously considered. No doubt the two might occur together, and probably some day such a case will be seen, but so far the coincidence has not been observed. In some cases there are multiple small areas of "septic" pneumonia found at autopsy, but these are not recognisable clinically and do not come under the clinical designation of lobar or broncho-pneumonia. We might expect that broncho-pneumonia would be common when we consider that the bronchi contain large amounts of pus, sometimes for long periods of time. May it be that in the ætiology of broncho-pneumonia we have given too much weight to the factor of infection by the bronchial route? The study of the foreign body patients suggests that we have.

Diphtheria.—Even with a suspicious foreign body history this diagnosis is often made. The toxæmia and the features of laryngeal obstruction, often present with a foreign body, suggest diphtheria. The fever is usually higher in foreign body cases—104° and 105° being common—than in diphtheria. Direct laryngoscopy is indicated and should prevent error. The result of cultures is important. As there are usually signs in the chest suggestive of a foreign body the finding of them throws doubt on the diagnosis of diphtheria.

Pneumonia.—The distress, dyspnœa, cyanosis, high fever, rapid pulse, and respiration-rate all suggest this. If the examination consists largely in the use of the stethoscope the presence of rough breath sounds and râles may seem to support the diagnosis. But a careful study of the physical signs should prevent error, certainly in the great majority of cases. If there are local signs suggestive of foreign body but doubt remains, the X ray should answer the question. The greatest difficulty arises in the cases of a foreign body in the trachea in which there are harsh breath sounds with many râles over both lungs and some dullness in the lower part of both lower lobes, probably due to the accumulation of secretion. The breath sounds in these cases do not suggest pneumonia, and the râles are usually very coarse and of a kind not usual in pneumonia. One source of difficulty is a restless, frightened child in whom examination is difficult at first. Patience and repeated examinations may be necessary. The frequent change of signs in a short interval is often of value. If the signs in pneumonia are marked there is rarely any question of the diagnosis. If the signs in a foreign body case are general, this may be due to a body in the trachea, in which event they are largely found on auscultation. If due to a foreign body in a bronchus, the general signs are due to bronchitis and secretion, while the lung involved gives characteristic local signs.

The X Ray Diagnosis of Non-opaque Foreign Bodies.

The majority of the cases with acute features are due to non-opaque substances, usually vegetable, and therefore the X ray diagnosis must be made by a study of the changes in the lungs. As regards the diagnosis from physical signs, it makes no difference whether the body is opaque or non-opaque, but from the X ray side the problem is a much more difficult one. By systematic study of these cases, however, Dr. W. F. Manges, of the Jefferson Clinic, is able to diagnose the presence of the non-opaque about as accurately as the opaque substances. The changes in the group of cases in which a ball-valve action occurs are especially characteristic, for if air enters the lung but cannot escape there is *obstructive* emphysema on the *affected* side and *compensatory* emphysema on the *unaffected* side. This was first described by Iglauer [1] in 1911 and 1912 and has been extensively studied by Manges.[2] The signs of acute unilateral obstructive emphysema are: (1) Greater transparency of the affected side, due to the larger amount of contained air; (2) displacement of the heart and mediastinal structures towards the unaffected side, due to the greater size of the affected lung; (3) depression and partial fixation of the diaphragm on the affected side; (4) compensatory emphysema on the unaffected side with increased excursion of the diaphragm. The movement of the sound lung is marked and hence, in plates taken at full inspiration, there may not be much difference in the shadow of the two lungs, but at the end of expiration the plate shows a marked difference. The changes are most marked at the end of expiration. The diaphragm signs are most important and enable obstructive to be distinguished from compensatory emphysema if there is any doubt. The signs are most marked if the child cries or struggles. The picture seen by the fluoroscope is striking. (Fig. 7 on Special Plate, THE LANCET, April 19th.)

This condition may persist for some time if nothing occurs to prevent the entrance of air. With swelling of the mucosa the entrance of air may be prevented at times and so the signs may vary. Air may be absorbed and secretions accumulate. After complete removal of the foreign body these signs usually disappear within a few hours. If they persist after 24 hours there is probably another foreign body present, which is not uncommon in the case of nuts, several fragments of which may have been aspirated.

Secretions may accumulate in the portion of lung below the foreign body and give an increased shadow. This may be difficult to distinguish from the early stages of abscess. *Collapse of the lung*, if marked, gives definite signs. The heart is displaced to the affected side, the position of the diaphragm is high, and there is a marked shadow over the area involved. If a foreign body in the trachea causes considerable obstruction there are signs of obstructive emphysema in both lungs. The diaphragm is depressed on both sides and is higher on inspiration than on expiration; the heart is vertical and more in the mid-line.

Inorganic Foreign Bodies which Do Not Cause Complete Obstruction.

1. There is a variable *history*—if one can be obtained—of choking and gagging at the time of entrance followed by a symptomless interval of variable duration.

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[1] Ohio Medical Journal, April, 1911, and Lancet-Clinic, 1912, cii., 22.

[2] Amer. Jour. of Roentgenology, 1922, xii., 288.

2. The amount of *cough* varies, but tolerance is soon established as a rule. The cough, which appears later, is due to the secretions and the irritation caused by them. Should the foreign body remain in the trachea cough is likely to be a marked feature.

3. *Sputum.*—This may be blood-streaked early and consist largely of mucoid material. Later it tends to become purulent and very often foul and offensive. A varying length of time elapses before this occurs. With abscess formation and the establishment of bronchiectasis the sputum is of the usual character found in these conditions. Hæmoptysis is not uncommon, and some histories speak of it occurring at intervals over many years.

4. *Fever.*—This is present at some time or other. In the early stages it may be present for a few days and then disappear to return later. The height and character of the curve are very different; all varieties are seen. With suppuration the record is that usually found in septic conditions. Chills frequently occur with the fever.

5. The *general health* usually suffers to some extent. In children if the foreign body is retained for some time there is a decided retardation of growth, both physical and mental in some instances. The former is the more common. Clubbing of the fingers and toes is common in chronic cases. Death results from septic infection or from some accident, such as profuse hæmorrhage, pneumothorax, or empyema.

It is to this group that the majority of the chronic cases belong. In some cases, such as pins, there may be decreased expansion only. If obstruction occurs the signs are those of involvement of a lobe, or rarely the whole lung, which shows decreased expansion, diminished or absent vocal fremitus, dullness or flatness, and variable signs on auscultation. The sputum is purulent, there is fever, and the X ray study shows lung tissue which gives a dense shadow. The two conditions for which these cases are mistaken most often seem to be tuberculosis and empyema. The mistake of regarding such a condition as pulmonary tuberculosis has very little excuse. If the process is in a lower lobe, as is common, this is in itself against tuberculosis, and despite marked signs and profuse sputum, tubercle bacilli are not found. If a whole lung is involved, with such extensive changes due to tuberculosis, the other lung should show disease. *Empyema* seems to be diagnosed much more often, judging by the number of our patients who give a history of having been aspirated. A smaller, but a surprisingly large relative number, have had the pleura opened on account of the incorrect diagnosis of empyema. A careful study of the physical signs should prevent the error. Vocal fremitus is rarely absent, although it may be greatly diminished. The resistance is not as marked as that given by fluid, and to this great importance should be given. The area of dullness may correspond to the lobe, and this is not characteristic of fluid. Shifting dullness is not obtained. Smaller areas of dullness may suggest encapsulated fluid. If there is difficulty the use of the needle and the X ray study should prevent error. In our cases with empyema as a complication there has been no difficulty in its recognition. The signs on auscultation may vary from day to day, and as many râles are often present they speak against fluid. If the heart is displaced it is likely to be towards the affected side, not away from it as in empyema. (Fig. 8 on Special Plate.)

From animal organic material, such as pieces of meat or bone, it is interesting to note that the reaction caused is not much greater than that due to metallic substances. Pus seems to form more rapidly, but the general course of events is much the same.

Neoplasm of a Bronchus.—This rare condition may simulate the signs of a foreign body very closely, especially if, as in a case under observation at present, the growth almost completely plugs the bronchus. In this patient the signs were in a lower lobe. There had been repeated severe hæmorrhages. New growth was suspected and its presence verified by bronchoscopy. The X ray plate taken after bismuth had been introduced into the bronchus showed the rounded outline of the tumour very closely.

Aneurysm and Enlarged Mediastinal Glands.—It is evident that if these cause pressure on a bronchus signs suggestive of foreign body may be found. No difficulty has arisen from aneurysm, but in some few cases of enlarged glands there has been doubt for a few days. This is especially likely to occur if there is a calcified gland situated so that in the X ray plate its position suggests that it may be an object within a bronchus. Careful study and observation for a short time usually give the diagnosis. An object in a bronchus of the size of the shadow would cause complete blocking which gives definite signs, much more marked than those due to the pressure of enlarged glands.

Foreign Body in the Œsophagus.—If this is obstructive, food and secretions enter the trachea and give general signs on auscultation. Considerable irritation may be set up and suggest a foreign body in the air passages. The absence of local signs, the X ray study, and direct examination give the diagnosis. In one patient ulceration in the œsophagus from a foreign body caused perforation into the air passages and gave a puzzling picture.

Exploratory Bronchoscopy.—If other methods have failed this should be done, needless to say by competent hands. The direct inspection of the bronchus to each lobe gives information, as Dr. Jackson says, as does cystoscopy of the appearance of the ureters. It may be said that we have had to use this method very rarely. It is very useful in cases of abscess or bronchiectasis in which there may be a question of the presence of an object, such as a tooth, which does not show clearly in an X ray plate.

The *position* of a foreign body can usually be determined with accuracy if it causes any degree of obstruction. The signs are in the area of lung supplied by the obstructed bronchus and, as a rule, are well indicated. If granulations have formed and extend upward so as to involve a higher bronchus the site of obstruction can be determined, but the foreign body is below this. In opaque objects the X ray study gives the answer. With a structure such as a pin it may be possible to determine the lung involved but not the bronchus, although marked limitation of movement below, rather than above, speaks for a lower lobe bronchus. The presence of signs on auscultation due to secretions rarely gives difficulty.

The *character* of the foreign body may be determined by the history. Some vegetable substance is suggested by marked general features, fever, toxæmia, &c. The curious fine râles sometimes heard over the area where a small metallic body is situated may be suggestive. Naturally, in the opaque group the X ray study is essential. Whether the blocking is complete or partial the situation gives some idea of the size. The diagnosis of the character of the foreign body is most important in the vegetable group as they are the most dangerous to life.

PROGNOSIS.

This is not to be stated in any set terms, as can be inferred from the great differences in the effects produced by various objects. When a foreign body has gained entrance to the trachea or bronchi there is naturally the hope that it may be expelled without interference. This does occur, but in a very small percentage; in Jackson's experience it has been in 2 per cent. of the cases. It may be soon after aspiration or a long time later, when with coughing the object may be expelled with a large amount of pus. We have seen, in rare instances, in cases in which several portions of a peanut had been aspirated, that after removal of one portion by bronchoscopy a smaller portion was coughed up subsequently. But in estimating the prognosis the slight chance of removal in this way should receive very little consideration.

Any object which has gained entrance to the air passages can be removed by skilled hands. In Dr. Jackson's clinic there has been a successful result as regards life in about 99 per cent. Almost all the deaths have occurred in the nut cases, despite removal. There is no instance of failure to remove the foreign body when sufficient opportunity was given. In one instance, mentioned previously, death occurred from hæmorrhage before the foreign body could be removed. It had been present for 36 years and new growth had developed. The great majority of the removals were done by Dr. Jackson; some were done by his assistants Dr. G. Tucker and Dr. L. F. Clerf.

The character of the foreign body is of the greatest importance. The substances of vegetable origin are in a special class. The evidence suggests that in practically every case, if the object is not removed, death follows. This may be in a few days, from the severe septic tracheo-bronchitis plus toxæmia, or result some time later from gradual exhaustion plus infection. A few patients may survive long enough for abscesses to form, but in these death, if delayed, is no less sure. Age plays an important part; the younger the child the more severe the symptoms and the greater probability of death occurring in a few days. The time between aspiration and removal is important, as the shorter stay of the foreign body the better the outlook. But even here early removal may not save the child, as in two cases quoted, one of a peanut and the other of a grain of corn, death resulted although the foreign body was removed on the day of aspiration. The degree of toxæmia is a useful guide. In general, it may be said that if the foreign body has been removed the outlook for recovery is better than the general condition suggests. Many children whose condition is desperate recover in a surprising way.

In the group of inorganic substances with skilled bronchoscopy and removal within a short time of aspiration the outlook is excellent and recovery is almost certain. As regards life the danger comes late from suppuration and abscesses. These cases differ in no way from such conditions due to other causes as long as the foreign body is not removed. If this is done then one can say that the outlook is always much better than in such cases due to other causes. The removal allows drainage and the improvement is often surprising. In this group the character of the foreign body plays a large part. One which causes little, if any, trauma and does not interfere with the entrance of air and drainage may be followed by slight change. An irregular mass, such as a tooth or an object with sharp edges, which injures the mucosa, is a much more serious matter. In the great majority of cases in which there has been abscess formation or bronchiectasis, the patient has recovered good health. There may be changes left in the lung but the restoration of function is remarkable.

With a foreign body in the trachea or one in a main bronchus which may be expelled into the trachea the outlook is always uncertain, as the foreign body may become impacted in the larynx following cough. After removal of the foreign body or bronchoscopy in young children there is always the danger of a marked increase in the usual subglottic swelling. This may come on or increase suddenly, and unless tracheotomy is done promptly death results. The care and skill which are available have an important bearing on the outcome in such cases.

TREATMENT.

Removal of the foreign body is indicated; the technical details it is not in my power to discuss. Certain aspects of the problem may be noted briefly. The patient with a movable foreign body in the trachea is always in danger of impaction in the glottis when the object is forced up from below by cough. Hence efforts to favour removal by inverting the patient are contra-indicated. In the patients with subglottic œdema there is always danger of complete obstruction. The question of tracheotomy should always be in mind, and this should not be delayed too long. Naturally, no set rules can be given for this, but it is better to do some tracheotomies which might not be necessary than to lose a patient by delaying it too long. Efforts to remove a foreign body by the fingers should not be made.

With a foreign body in a bronchus it is important to take time to study the patient thoroughly, unless perhaps in the very acute and severe cases due to vegetable substances. If the child is exhausted from a journey it is important to give opportunity for rest. There is no special treatment required in preparation for bronchoscopy. In patients with pneumothorax or empyema careful study of the whole problem is advisable before deciding as to the procedure. In our cases we have drained the empyema first.

After bronchoscopy in young children the danger of subglottic œdema must be kept in mind and the child watched constantly so that tracheotomy can be done when required and not delayed too long. If there is much secretion or an abscess is present it is an advantage to use the effect of gravity in aiding drainage after removal of the foreign body.

The physician may be asked to decide as to the wisdom of bronchoscopy in a child who is desperately ill with a foreign body in the air passages. Naturally, something must depend on the skill of the bronchoscopist who is available. In properly trained hands it seems wise to proceed with bronchoscopy as giving the best chance of recovery.

An Address

[ABRIDGED]

ON

MENTAL STATES IN ALCOHOLISM.

Given before the Society for the Study of Inebriety on April 8th, 1924,

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WHEN full allowance has been made for the large number of cases in which alcoholic indulgence is only a symptom of some underlying mental disorder, it remains true that alcoholism is the principal cause of a serious amount of insanity. We find that the forms of mental disorder associated with intemperance present an extraordinary variety of clinical states, covering almost the whole range of psychological medicine. Nevertheless, the clinical examination of a patient with alcoholic insanity rarely discloses symptoms which are in themselves a trustworthy guide to the cause of the disease. In other words, with one or two exceptions, the alcoholic psychoses present few specific features.

THE ALCOHOLIC PSYCHOSES.

Bevan Lewis, in his text-book, gives one of the best clinical descriptions of the alcoholic insanities. He divides them thus: 1. Acute alcoholic insanity. 2. Chronic alcoholism (*a*) amnesic form, with or without delusions; (*b*) chronic delusional form; (*c*) dementia. The attempt to subdivide accurately the clinical states confirms the conclusion that states produced by alcohol are apt to be indistinguishable from those produced by other agents. This, of course, raises the question whether these various mental states depend on the particular disturbing agent producing them, or on the individual's constitutional make-up and mode of reaction. In any case, we may safely conclude that the problem is not merely one of alcohol or no alcohol, but of temperament, personality, and nervous organisation.

We will now consider some of the clinical varieties of mental disorder due to alcoholic intemperance.

Alcoholic Delirium (Delirium Tremens).—This is more specific in its general features than any other mental disorder attributable to alcoholic indulgence. The combination of tremor with delirium is practically unseen elsewhere. By itself neither symptom is peculiar to alcoholic patients; but the syndrome known as delirium tremens can hardly be mistaken for anything else. The relation of the delirium to alcohol, however, is by no means clear. My experience confirms that of Dr. Hare and others, who look upon the delirium as essentially a deprivation symptom. The patient has acquired a toleration for alcohol; he has come to find that a considerable quantity is necessary to enable him to carry on his work, and if for any reason he cannot take or assimilate his accustomed quantity delirium appears. The rapid improvement that follows the administration of alcohol in early cases of delirium is strong evidence that this view of the matter is correct. But we have still to explain the delirium itself, and the suggestion has been made that it is due to a secondary toxæmia. Jauregg advanced the theory that excessive indulgence in alcohol produced an antitoxin which enabled tolerance to be established, and that delirium was caused by an excess of this antitoxin. It has also been claimed that the serum of confirmed alcoholics yields a toxin that will produce delirium in dogs.

Transient Mania (*Mania a potu*).—This condition occurs after, or in the course of, a drinking bout. It sometimes arises from a peculiar susceptibility to alcohol. One man, after a single glass of whisky, will become violently aggressive, while another may become homicidal without losing consciousness. But much more serious are the automatic unconscious states that sometimes occur, during which disasters happen which afterwards are not remembered. Almost any newspaper we pick up records a crime committed during intoxication.

Acute Alcoholic Hallucinosis.—This form of mental disorder attacks persons who have been drinking heavily for a long time. It differs from delirium tremens in that the hallucinations are more coherent, and fit in with delusions—probably of suspicion or persecution—which usually lead to acts of violence.

Polyneuritic Psychosis (*Korsakov's Syndrome*).—Long-standing alcoholic intemperance is the most common cause of this disorder, but it occurs also in chronic poisoning by arsenic, lead, and mercury, and in other diseases causing neuritis—e.g., diabetes and septic poisoning. The peculiar symptoms from our point of view are the extraordinary loss of memory for recent events and the extreme dissociation. Here the pathologist can suggest an explanation, as distinct degeneration of nervous elements can be observed. This affects either the peripheral nerve fibres, or the cortical fibres, or both, and it is assumed that the clinical symptoms vary according to the region first attacked. The peculiar tendency to fill up gaps in the memory by fictitious statements is not easy to explain. The senile patient who cannot remember is conscious of his defect, and is very clever in evading questions calculated to expose it. But in the disorder we are considering the patient does not know that he has a bad memory; and on being asked a question he replies promptly with any statement that the inquiry may have suggested. Not only the memory, but the self-critical faculty is absent.

Other Types of Mental Disease.—Many other types of mental disease arise from habitual intemperance; indeed, they are so numerous that it will be impossible to describe them. The most common is a mild state of mental enfeeblement, which may escape the notice of a casual observer, and cannot be called dementia. But it is quite apparent to intimate friends and those who can contrast the present with the past. In some cases there is a progressive amnesia, which may be due to a complication such as arterio-sclerosis. Another common type begins with delusions of suspicion, and rapidly reaches a paranoiac condition. Hallucinations of hearing are frequent; and the delusions generally refer to persecution by unseen enemies. Such patients are often homicidal, and are perhaps the most dangerous persons under care in mental hospitals. The duration of the illness is usually shorter than in true paranoia, and advancing dementia softens the clinical features. Between these prominent types are large numbers of cases, many of whom, when compelled to abstain, settle down in their guarded surroundings and become excellent workers. They do not recover, but they do not deteriorate further. I can only mention the epileptic type and the pseudo-paralytic type, which may present an exact picture of general paralysis in speech, gait, and behaviour. Again, there are cases of maniacal excitement, of depression, and of confusion, whose protean nature makes description impossible.

ALCOHOL AND INHIBITION.

Turning now to consider the immediate effects of a single dose of alcohol, it is generally agreed that it is not a stimulant but a sedative. Even when a dose is followed by increased ease in performing certain actions, this is due, not to the direct stimulus afforded, but to the removal of inhibitions. The usual formula is that alcohol tends to weaken and paralyse nervous functions, attacking the higher centres before the lower, and affecting qualities acquired late in the history of the race, such as self-criticism, before the more primitive qualities. I confess that I am perplexed when I try to set up a hierarchy of mental qualities, nor am I sure that the inhibitions weakened by alcohol are necessarily high. How many people, for example, have been too self-critical to create anything of moment! Be that as it may, however, there is no doubt that alcohol, even in moderate doses, is a sedative, and tends to weaken our mental powers. That the main reason for its consumption is the sense of well-being that it produces is more doubtful. Some good observers report that they are conscious of no such feeling, while in a few persons a dose of alcohol is followed by malaise or depression. It has been contended that the sense of well-being, or euphoria, is a secondary effect, depending on the company present and other extraneous conditions. Prof. Starling best expresses the view that alcohol is taken chiefly for the purpose of enabling an individual to forget the worries and perplexities of life. It certainly appears to induce a selective process in the memory, or perhaps, more correctly, the attention, whereby the painful facts of life are forgotten or unheeded. But yet its primary effect can hardly be on the memory, which is by no means one of the lately acquired mental attributes. In this connexion I remember very distinctly a mountaineering episode. We were on the return journey; I was physically exhausted, and I had lost all my courage. I simply dared not face the descent of a rude staircase cut in the ice until the guide pulled out his flask. One draught, and in five minutes I had accomplished the descent! But what had that to do with memory or even intelligence? I was perfectly aware of the risk I ran, but my fear of it had vanished; I did not doubt that I should keep my footing.

ALCOHOLISM AND INSTINCT.

Without entering on a discussion of Dr. Stoddart's view that "the alcoholic drinks enough to let his unconscious have its fling, and thus finds happiness," or examining the ground covered by the psychoanalytical school, it seems clear that many of the symptoms of temporary intoxication, as well as those occurring in alcoholism, may be regarded as arising from disturbance of the instincts. As the late Dr. Rivers said: "The altered behaviour which follows the taking of excessive amounts of alcohol can be traced to the over-action of instinctive and other early tendencies normally kept under control by the higher levels of mental activity." The connexion between the instincts and insanity in general, which was made clear more than ten years ago by Sir John Macpherson, has occupied many workers; and here, following their line of thought, we may briefly trace the relation of alcoholism to the three primitive instincts—the herd, the sexual, and the ego.

1. *The Herd Instinct.*—We find that small doses of alcohol tend to promote conviviality, and lead to a relaxation of social conventions. This is seen in

public-houses or on festive occasions. In a minority of cases, however, the tendency is to drink in solitude and to escape from all social claims.

2. *The Sexual Instinct* is markedly affected by alcohol. It becomes less under control, and crimes of passion, and indecencies of all kinds, are the result. Dr. Sullivan said that in half the convictions for sexual offences the influence of alcohol could be traced.

3. The *Ego Instinct* is conspicuously affected. I have spoken of the dispersal of fear by "Dutch courage." Self-criticism is in abeyance, and the alcoholic does not realise the effect of the drug upon him. Commonly there is greater self-satisfaction, and a sense of power, which degenerates into callous disregard of the claims of others. Altruism tends to disappear. Then there is the reaction of remorse, often leading to suicide. In pathological states there are delusions of suspicion which may end in homicide. Dr. Sullivan tells us that three-fifths of the total number of crimes of violence are due to alcohol, although in such crimes as theft and forgery its influence appears to be negligible.

It may be suggested that the primary influence of alcohol is on the vegetative nervous system. That it produces a dilatation of the peripheral vessels is well known, and possibly it also acts on the nervous mechanisms involved in the expression of the emotions, including the endocrine organs. But where so much is vague and uncertain it is difficult to draw conclusions. Until we know more of the physiology of the nervous system and its relation to instinct, we are unable to speak with confidence on the mental action of alcohol. Meanwhile we cannot but marvel at the extraordinary changes produced in human beings by the taking of a small quantity of this well-known chemical substance!

SCARLET FEVER OTITIS.

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SCARLET fever, as judged by case-mortality, is, in its present phase at any rate, a comparatively mild disease. During the last 15 years case-mortality has declined from what was then considered the low figure of about 3 per cent. to the 1 per cent. of the present day. There has been a decline pari passu in the incidence of complications. These are, however, still sufficiently numerous and important to demand the utmost that can be done for their prevention, and failing that, for their treatment.

The nasopharynx being primarily and invariably involved in every case of scarlet fever, which is, as Trousseau observed, a "maladie essentiellement angineuse," it is only to be expected that complications arising from direct spread of infective material from the nasopharynx—e.g., otitis media—should play an important part in the clinical picture of the disease. Many estimations of the percentage incidence of scarlatinal otitis have been made. Writing in 1909 Hunter,[1] basing his figures on cases treated at the London Fever Hospital, gives an average of otitis in a total of 648 cases of scarlet fever treated during 1904–07 (four years) as 10·6 per cent. (mastoiditis 0·7 per cent.). Yearsley[2] quotes the Metropolitan Asylums Board figures for 1906 as 13·21 per cent. (of whom 0·68 per cent. had mastoid abscesses) of 17,829 scarlet fever admissions. In 1907 the percentage of otitis from the same sources was given as 11·4 per cent.

An analysis of cases admitted to the Birmingham City Hospital for the two years 1921–22 shows that of 3684 patients admitted with a diagnosis of scarlet fever "280 cases either had on admission or developed during their stay in hospital running ears on one or both sides. This number represents 7·6 per cent. of the crude scarlet fever admission figure. Of 122 cases of otitis during 1921, 22 had running ears on admission, and in nearly every one of these cases the discharge was of long standing. Scarlet fever could not therefore be blamed in these instances. On investigating the origin of the otorrhœa in these cases it was found that in the majority measles was the originating exanthem."[3]

Importance of Aural Complication of Exanthemata.

One of us (F. B. G.) recently examined 100 consecutive cases of ear discharge in elementary school children under 14 years of age. It was found that in 18 per cent. measles, and in 19 per cent. scarlet fever was stated by the parents to be the starting-point of the disability. Various figures have been adduced to show to what extent the exanthemata are causal of the chronic discharging ear of adult life.

Kerr Love[4] places the responsibility of measles at 23·7 per cent. and of scarlet fever at 15·8 per cent. Although there has been a reduction in the incidence of scarlatinal otitis during the last 15 years, it is clear that the aural complications of this disease still present a serious otological problem, and when account is taken of the similar destruction wrought by measles, which equals, or possibly exceeds in its extent that due to scarlet fever, it is obvious that the prevention, if possible, or at any rate the mitigation of these aural complications constitutes an important task for preventive medicine. In our experience an otitis media occurring in the course of an attack of diphtheria (as distinct from combined diphtheria and scarlet fever) and from which true *virulent* diphtheria bacilli can be recovered, is very rare. Mere morphological diagnosis of bacilli present in the discharge is useless, since diphtheroids are recoverable from many ear discharges. (A virulence test of the organisms is essential.)

Age-incidence of Scarlatinal Otitis.

It is of interest, and we think of importance, further to analyse the incidence of scarlatinal otitis occurring in age-periods. We have done this for the cases admitted to this hospital with a diagnosis of scarlet fever during two complete years 1921–22. It should be noted that Table I. represents the crude admission figures uncorrected for errors in diagnosis, and further does not differentiate between those cases which developed otitis during stay in hospital and those who already had it upon admission. It does, however, represent the extent of the otological problem at this hospital, and indicates the age-group which presents that problem most acutely.

TABLE I.

Age-period.	Cases of scarlet fever.	Cases of otitis.	Percentage in age-period.
0– 5	758	117	15·4
5–10	1686	132	7·8
10–15	703	24	3·4
15–20	192	7	3·6
20 plus	245	10	4·0
	3684	280	
	7·6 per cent.		

It will be seen that although the greatest number of admissions (45 per cent. of the total) are of children aged between 5 and 10, and that this age-group provides 40 per cent. of all cases of otorrhœa occurring in the scarlet fever wards, yet the percentage incidence in the various groups is very different. Of the children admitted at ages 0–5, 15·4 per cent. developed otitis—a percentage incidence twice as high as in the 5–10 group, and approximately four times as high as in either of the remaining age-groups. The percentage incidence for all ages was 7·6.

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[1] Hunter, Wm.: The Practitioner, 1909, lxxxi., 1, No. 487.
[2] Yearsley: Ibid.
[3] Report, M.O.H., City of Birmingham, 1922, p. 57.
[4] Kerr Love: Diseases of the Ear in School Children, 1919.

Now, low as the case-mortality at all ages of notified cases of scarlet fever is at the present time, it will be seen from the following table (Table II.) collated from the Birmingham Health Reports for 1921–22 (the same years as are under consideration above), that the case-mortality per cent. from 0–5 is considerable.[5]

TABLE II.—*Percentage Mortality of All Cases of Scarlet Fever Notified in the City of Birmingham in 1921–22 According to Age-groups.*

Ages in years.	Cases notified.		Deaths registered.		Case-mortality percentage.	
	1921	1922	1921	1922	1921	1922
Under 1.. ..	23	28	2	1	9	4
Between—						
1– 2.. ..	91	83	10	6	11	7
2– 3.. ..	142	161	5	10	4	6
3– 4.. ..	175	161	2	1	1	1
4– 5.. ..	219	196	3	3	1	2
5–10.. ..	1599	1452	12	9	1	1
10–15.. ..	710	710	4	2	1	0
15–20.. ..	160	205	0	1	0	0
20 and over	210	263	2	3	1	1
—	3320	3250	40	36	1	1

The period 0–5, then, is responsible for the greatest case-mortality from the disease, and also for the greatest percentage incidence of otitis. These young children die not from toxic scarlet fever, but from the septic type, characterised by rhinitis, otitis, and adenitis, and terminated all too frequently by septic broncho-pneumonia. They have an overwhelming infection of the nasopharynx. An analysis of cases admitted during 1922 shows that the incidence of otitis and rhinitis (at all ages) was highest during the first quarter of the year, and lowest during the last quarter.

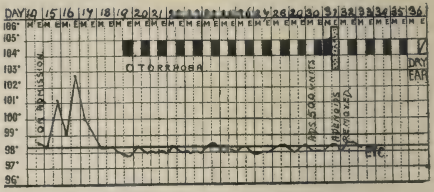
Operative Measures.

From the preceding remarks it will be seen that the running ear of scarlet fever is a frequent complication of the malady, and if untreated is the cause of a great deal of the chronic otorrhœa in school and adult life. Further, our figures would seem to point to the fact that this complication is more liable to occur under the age of 5, when the nasopharyngeal infection would find a suitable nidus in the adenoid mass generally present at this age. The Eustachian tube from its position and relatively larger size in infants would, at this age, be expected to carry the infection to the middle-ear readily. It would appear, therefore, that if infection from the nasopharynx could be eliminated early in the onset of a scarlatinal otitis, further infection through the Eustachian tube would be prevented, and the course of the complication considerably shortened. Yearsley, as long ago as 1909, suggested the advisability of removing the adenoid mass during the convalescence of scarlet fever as a means of aborting the ear discharge. Treatment of the nasopharynx by douching, as formerly practised, can only be mentioned to be condemned as productive of more untoward complications than good. Surgically it would appear that two indications are manifest in dealing with the infection of the middle-ear—i.e., (1) removal of the initial focus of infection—e.g., the adenoids (and tonsils, if also sharing in the infection), (2) release of the pent-up secretions of the middle-ear—i.e., paracentesis of the drum-head.

The theoretical merits of the above principles are beyond dispute, but on their practical application opinion appears to be divided. Layton in his report to the Metropolitan Asylums Board for the year 1920–21 says on the subject of paracentesis of the drum-head, "In my opinion it is upon the early and efficient performance of this operation in every case in which there is bulging of the drum-head that the success or failure of any organisation set up by the Board for the prevention of chronic otitis will depend," and he goes on to say that in the vast majority of cases if this operation is performed at the right time the inflammation of the ear will clear up and chronic ear discharge will not ensue; at the same time he draws attention to the necessity of using a general anæsthetic for this operation.

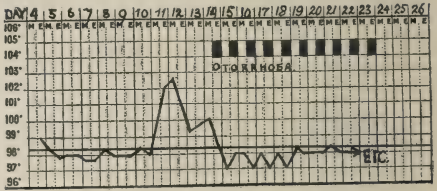
With the above statements we agree in great part, but the following considerations require attention. Scarlet fever and measles most often occur during the first ten years of life. In a hospital with special facilities of light for inspecting ears, and for operative purposes, the diagnosis of a bulging membrane in an infant of 3 or 4 years of age is a great deal easier than in a private house, where we consider that the practitioner in charge of the case is called upon to perform an intricate and delicate operation under conditions which are often extremely adverse. Further, others have doubted whether the results are so uniformly successful as above suggested, and we would here remark that no figures for such cases are recorded.

CHART 1.



Illustrating premonitory pyrexia. (Scarlet fever No. 602, 1923, aged 1 year 4 months.)

CHART 2.



Illustrating premonitory pyrexia and result of removal of adenoids. (Scarlet fever No. 1118, 1923, aged 8, desquamation on admission.)

To come to what in many cases must be the primary focus of infection—the post-nasal catarrh and methods of dealing with this. It has been the practice of this hospital during the last year to devote a separate ward to cases of scarlet fever with otitis. All such cases are transferred to this ward and barrier-nursed. If the ear does not respond successfully to local treatment, and it is thought that the condition or amount of adenoid tissue is responsible for the continuation of the discharge through obstruction or infection of the Eustachian tubes, then operation to remove the adenoids (and the tonsils, if obviously infective) is performed. In the average case of scarlet fever without other complications this can be done with safety in the fourth week of disease. We have found that cases responded to removal of the adenoids alone, as satisfactorily as those in which the tonsils were also removed. If the adenoids alone are removed, we consider that this operation is productive of far less shock and risk of hæmorrhage than if the tonsils are removed at the same time. If at this stage the perforation of the membrane is considered inadequate for drainage it is enlarged from the existing perforation. A prophylactic dose of diphtheria antitoxin is given before operation. So far no complications have attended this line of treatment, which has been given a lengthy trial in Edinburgh by Gardiner.[6] The following figures from this hospital[7] may be of interest. Before an ear ward was established, or special supervision of ears undertaken, the average duration of the running ear in cases treated by routine methods was about 40 days from onset.

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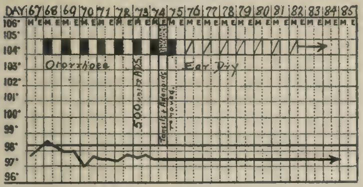
[5] Reports, M.O.H., City of Birmingham, 1921–22.

> "In 1921, 108, or 89 per cent. of the total of 122, cases of scarlet fever otitis were ultimately discharged with dry ears, including three upon whom a modified mastoid operation had been performed. Three died [from other complications] and 11 were discharged from hospital with ears still running. Superficially these results may appear to be fairly satisfactory, inasmuch as a large percentage of cases left hospital with dry ears, but they are not necessarily so because in most of these cases the source of the running ear had not been removed. There is little doubt that the ears in a number of these cases started discharging again after leaving hospital, resulting in chronic otitis, and possibly ultimate deafness."

CHART 3.



Illustrating symptomless late onset of otorrhœa and speedy success of operation. (Scarlet fever No. 423, 1923, aged 3, pigeon chest. Previous illness, measles.)

The average duration of the ear discharge in 20 cases treated in a special ear ward with efficient means of examination and treatment, but without operation, was 32·4 days. The last 50 cases treated by removal of adenoids, as well as paracentesis where necessary, were dry in an average of 15·8 days. Gardiner's Edinburgh figures show a great similarity.

Clinical Manifestations of Scarlet Fever Otitis.

The clinical manifestations of the onset of scarlet fever otitis are as follows:—

1. The onset in about half of the cases is painless; if occurring in the acute stage of the disease, pain is more liable to be complained of than when the complication arises during convalescence.
2. A small rise of temperature should always suggest an examination of the ears. The following charts show that this rise often precedes the otitis by a day or more. Timely paracentesis in these cases should be of value (see Charts 1 and 2).
3. Symptomless discharge may be the first indication. In our belief, in early life the membrane ruptures extremely easily, probably owing to its finer texture at this age. We have found that this mode of onset is more common in children under 5 (Chart 3).
4. In our experience mastoid complications are rare under 5 years of age. Two only out of a series of 16 consecutive cases of mastoiditis occurred in children under 5, a figure out of all proportion to the incidence of otitis in this age-group (Table I.).

We wish to record our very strong agreement with Gardiner that scarlet fever does not, as a rule, cause a rapid destruction of the membrane in the early stages of the disease if properly treated. In the last six months at this hospital less than half a dozen cases have been discharged with large perforations, and in the majority the perforation had completely healed before discharge. From the point of view of preventive medicine we hold that this fact is important, for an ear with a perforation is more prone to future attacks of suppuration than if the membrane were intact. It would appear that early and energetic treatment is the most economical means of dealing with this large class of case.

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[6] T. Gardiner: Journal of Laryngology, xxxvii., No. 10.

[7] Report to M.O.H., City of Birmingham, 1922.

ORGANIC ARSENIC COMPOUNDS IN PULMONARY TUBERCULOSIS.

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ARSENIC, a very old remedy in tuberculosis, is one of the few medicinal substances used in this disease which has withstood the test of time. Usually given as Fowler's solution, it is of value at one time or another in most cases of chronic pulmonary tuberculosis, and its action in glandular infection is frequently most satisfactory. Arsenic seems to do best when given over rather long periods in small doses, occasional intervals being allowed and no attempt being made to increase the dose. Watch must be kept for intolerance, which commonly manifests itself in the gastro-intestinal tract; and it must not be forgotten that arsenic sometimes seems to predispose a patient to an attack of herpes zoster, and that its prolonged use is stated to have brought about malignant disease of the stomach.

The work recorded in the present paper was undertaken in order to discover whether the modern organic preparations of arsenic offer any advantages over the older compounds, particularly in pulmonary tuberculosis.

Precautions against Undesirable Sequelæ of Administration of these Drugs.

The exhibition of these drugs is not entirely free from risk, and, as they are used for the most part by those engaged in treating venereal disease, a brief résumé of these risks and of the means employed to minimise them may not be out of place. The reactions consequent upon the absorption of these drugs may be classified shortly as follows:—

Immediate Risks.—Symptoms appearing as soon as the injection is made, such as a bad taste in the mouth, pallor, sweating, flushing, nausea, violent retching and vomiting, prostration.

Mediate Risks.—Symptoms appearing from a few hours to two days after injection—e.g., malaise, headache, nausea, vomiting, and pyrexia. These constituted the "reactions" so often seen with the older types of arsenobenzol.

Remote Risks (jaundice and general dermatitis).—A discussion as to the causes and the treatment of these accidents will be found in any up-to-date textbook on venereal disease. The more alarming immediate reactions are best met by the absolutely recumbent position, adrenalin subcutaneously, and, later, sips of black coffee. Repetition of immediate reactions is said to be prevented by the prior use of atropine hypodermically, but this is not quite true, and in a disease like pulmonary tuberculosis, where retching may bring on hæmoptysis, it is wiser to give up the treatment.

All these undesirable sequelæ may be minimised by the proper preparation of the patient, which is a simple matter. On the evening before injection the patient receives a laxative pill, and next morning a small dose of white mixture to ensure an action of the bowel without severe purgation. The patient remains in bed and is allowed for breakfast a cup of tea, one boiled egg, and two thin slices of bread and butter. We usually make the injections about 11.30 A.M. and an hour before a drink of glucose lemonade containing 6 dr. of glucose is given. At 1 P.M. a cup of clear soup is given, and if the temperature is normal and the patient well at 3.45 he is allowed up, provided, of course, that he is not confined to bed on other grounds. Our patients return to bed at the usual hospital hour (8 P.M.) and continue next day on the grade of rest or work which they happen to have reached.

Hitherto we have only had a couple of cases of immediate reaction—both after intramuscular injections—and we have not been troubled by the other risks mentioned. In choosing preparations for experiment we have made use of a well-known brand of the "914" type of arsenobenzol for intravenous injection, and of "sulfarsenol" for intramuscular medication. At the outset it was supposed that the intramuscular method would give the better results owing to its slower and more prolonged action. This has proved to be the case, so that only one or two patients have had full courses of intravenous arsenic. The sulfarsenol was dissolved before use in a solution consisting of pure anhydrous glucose 5 per cent., and guaiacol 0·5 per cent. in distilled water, and injected into actual muscle tissue in the upper and outer part of the buttock.

The intravenous arsenic was given in weekly doses of 0·3 or 0·45 g. up to six injections, the course being repeated after an interval of a month in some cases. Sulfarsenol was given intramuscularly in three different dosages, the second proving the most useful—viz., a purely tonic course of six to eight injections weekly from 0·12 to 0·24 g., a similar series of 0·30 g. after a smaller trial dose, and a course of bi-weekly injections such as might be used in treating syphilis. It is, perhaps, unnecessary to add that the urine must be tested for albumin before treatment is begun, and again for albumin and bile before each injection.

Pain after intramuscular injections is negligible so long as the injection is into actual muscle and the part is well massaged afterwards; no patient has refused or objected to the treatment.

Results of Treatment.

In estimating the value of this or any other forms of treatment in pulmonary tuberculosis, we are fully conscious of the difficulties met in a disease where the unexpected so often happens; where patients appear to get well without special measures, or having improved for a time, fall back without any discoverable cause. The cases selected have been few, but, with the exception of one, were sputum-positive; and so far as possible they have represented various stages and grades of the disease. All were afebrile, or nearly so, at the beginning of treatment. Only a dozen cases have been treated so far, three of whom were benefited sufficiently to warrant a second course. All showed various degrees of improvement except two, and these have both exhibited physical signs of extending disease. One has gone home as unlikely to benefit by further sanatorium treatment; the other has remained a patient with a reasonable hope of ultimate arrest. Both cases showed an increasingly positive complement-fixation test, and if this is to be interpreted as an increase of antibodies in the blood (increased resistance) the effect of treatment may have been more favourable than we supposed, since a negative C.F.T. occurring in a *pronounced* case of pulmonary tuberculosis usually suggests that resistance has, for a time at least, broken down.

The principal effects noted are those which one would expect from arsenic, but they have been obtained more rapidly and in a more marked degree than in control cases treated with liquor arsenicalis added to emulsion of cod-liver oil or with Blaud's pill with arsenious acid. After each dose there is an increasing tonic effect, a feeling of well-being, sharper appetite, and returning strength. The improvement in the appearance, colour, and weight of the patient is very marked. Anæmia disappears more rapidly than under routine sanatorium treatment. Diminution of sputum and decrease in the number of tubercle bacilli present therein, however, are only in accordance with the improved general condition. That is to say, these organic preparations of arsenic have no direct lethal action upon tubercle bacilli in any way comparable to their action upon spirochætes. In one case of double infection where intravenous treatment was carried on despite several attacks of hæmoptysis, it was noted that these accidents were not followed by any pyrexia or physical signs of spread. It is possible, therefore, that the injections may have exercised some retarding influence. The fact that the patient knows that something definite is being done for him must not be lost sight of, and the "ritual" demanded by the treatment is probably beneficial in itself—at any rate it acts as a wholesome brake on the tendency found in most sanatoria on the part of both attendants and patients to hurry too much over the rest period.

Another point of interest is that the majority of patients have shown an increasingly positive C.F.T. The significance of this is uncertain; does it mean increasing resistance? We do not suggest that the injection of organic arsenic should be used as a routine in the treatment of pulmonary tuberculosis, or that it is suitable for general use outside institutions. What may be claimed is that it is an excellent method of exhibiting the drug where it seems indicated, particularly where there is pronounced anæmia, or where vaccines are to be questioned on account of extent with activity, or again in the type of case often met with which makes some headway in a sanatorium and then "hangs fire."

Also, one may add, there need be no hesitation in treating actively cases of double infection with benefit to both conditions. In the case of young adults with limited lesions, who would do quite well no doubt under ordinary sanatorium treatment, we have been struck with the more rapid progress made when organic arsenic is given. If the period of hospital treatment can be shortened safely, something is gained both for the working-class patient and the ratepayers.

The following cases illustrate various points:—

CASE 1.—W. A., aged 29, admitted Feb. 19th, 1923, sputum + + +, C.F.T. + + −, W.R. − − −, well-marked disease both upper lobes and right lower lobe where it was progressing. Obtained limited benefit from sanatorium treatment and then came to a standstill with the disease spreading slowly. Intramuscular sulfarsenol begun June 22nd (six small weekly injections, total 0·97 g.). Treatment stopped on account of immediate reactions. Disease has ceased to spread. Sputum much diminished and bacilli found with difficulty. C.F.T. + + +. Patient is still in the sanatorium and is carrying out the highest grade of manual labour easily.

CASE 2.—F. A., aged 20, admitted June 4th, 1923, sputum +, C.F.T. − − −, W.R. − − −. Limited involvement of right apex, with considerable loss of weight and anæmia. Systemic factor readily controlled by rest. Sulfarsenol intramuscularly was begun on the 22nd (eight injections at weekly intervals, total 1·51 g.). As improvement was considerable, a further course (total 2·30 g.) was given a month after the first. Patient has lost his anæmia entirely and gained 19 lb. C.F.T. − − −. There is still a little sputum which has been repeatedly negative. Physical signs of disease are detected with difficulty and the condition appears to be arrested. Patient is doing the highest grade of manual labour with ease. L. D., aged 19, was a similar, but more extensive case, both lobes of the right lung and probably the left apex being affected. C.F.T. − − −, sputum +. He was given eight injections of sulfarsenol (2·34 g.), treatment being begun before he was quite afebrile. He has gained 26 lb. and is able to do an intermediate grade of outdoor work without disturbance. The sputum remains + and the C.F.T. is + − −.

The next illustrates the value of organic arsenic in diagnosis.

CASE 3.—The patient, a male aged 27, was admitted with a history of hæmoptysis a few weeks before and also while on service in France. Both hæmoptyses had been between 8 and 10 oz. There was impairment at the left apex with rather harsh breath sounds and chronic laryngitis. Sputum negative, C.F.T. − − −, W.R. + + + (repeated). A skiagram did not afford any assistance. There was no history of specified disease, and no other signs or symptoms to help one in arriving at a definite diagnosis. Before being placed on arsenical treatment, he had had a short trial under general sanatorium routine with no particular result. He was given a full course of sulfarsenol intramuscularly (3·54 g. arranged in 12 injections) and biniodide of mercury by the mouth. The symptoms cleared up entirely and his general health improved markedly. The W.R., as might be expected, remained + + + and he was transferred to another department for further treatment as an out-patient.

The following case is included to show the value of organic arsenic in a case of extensive lung disease with activity.

CASE 4.—L. J., aged 28, admitted May 12th, 1923. Sputum + + +, C.F.T. − − −, W.R. − − −. The patient had glands removed from the neck in 1916 and again later. He first came under observation for lung disease in 1922. On admission he showed extensive old-standing disease of the left lung with chronic dry pleurisy and more recent active disease at the right apex. Although he was an excellent and obedient patient, two months sanatorium treatment failed to accomplish any real improvement—both temperature, weight, and general condition remaining variable despite absolute rest. Sulfarsenol was begun July 19th (eight weekly intramuscular injections, total 2·34 g.). At the end of this course he had gained 15 lb., the temperature was nearly level, sputum +, and C.F.T. + + −. The right apex was still active, but the left lung showed evidence of healing and the pleurisy had disappeared. After a month's rest, a further course has been given (six injections, total 1·65 g.). The total gain in weight is 18 lb. and the patient states he has not been so well for over a year. The sputum is tending to decrease and bacilli are less numerous. This patient is by no means "out of the wood," but we feel that arsenic has helped him very definitely. This, too, is just the type of case in which vaccines might do incalculable harm. The alteration in the C.F.T., which has been checked several times, is interesting. At the moment of writing the patient is suffering from a little renewed activity in the right side and the C.F.T. has fallen to ± − −.

Conclusions.

The administration of the organic compounds of arsenic is a valuable measure in cases of pulmonary tuberculosis where arsenic seems indicated. The intramuscular route is preferred.

The types of case suggested for this treatment are:—

(1) Cases of extensive disease with some activity, where one would hesitate to use vaccines, but where there remains some prospect of producing arrest or extreme chronicity.

(2) Cases which "hang fire" after a period of sanatorium treatment.

(3) Cases in young adults with anæmia and loss of weight, but otherwise favourable. It is thought that the period of institutional treatment may be shortened.

(4) Cases of double infection — syphilis and tuberculosis.

(5) As a therapeutic test in doubtful cases of lung disease. With simple precautions there is no risk; the mischief which may follow tuberculins cannot occur.

The improvement obtained is due to a general stimulation of the metabolic functions of the patient; there is no specific effect upon the bacilli. Organic arsenic does not pretend to be another new cure for tuberculosis.

Medical Societies.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF STATE MEDICINE.

The Prevention and Treatment of Congenital Syphilis.

A MEETING of this section was held in the Royal College of Physicians, Dublin, on March 14th, Dr. N. M. FALKINER, the President, being in the chair.

Dr. T. P. C. KIRKPATRICK opened a discussion on the prevention and treatment of congenital syphilis, dealing with the results he had obtained at the Lock Hospital and Dr. Steevens' Hospital, Dublin. He pointed out the difficulty there was in arriving at an accurate estimate of the incidence of congenital syphilis, but adduced figures taken from the returns of the Registrar-General for Ireland to show that the number of deaths from syphilis of children under a year old was the main determining factor in the total number of deaths recorded from that disease in Ireland. In addition to the loss of infant life, congenital syphilis was the cause of many disabilities in young adults. Dr. Kirkpatrick pointed out the importance of the Wassermann reaction as an aid to diagnosis in young people who do not present obvious stigmata of the disease. 114 syphilitic women who had come under observation had become pregnant of 148 pregnancies. Of these pregnancies 107, or 72·2 per cent., had resulted in healthy children, 22 in syphilitic children born alive, and 19 in dead syphilitic children or mishaps. In none of the failures had the women attended for sufficient treatment. The treatment advocated was the intravenous administration of some of the 914 preparations of arsenic, and the one generally used was N.A.B. Repeated doses were given during pregnancy and the administration controlled by Wassermann reaction of the blood. The results of the treatment of 63 congenitally syphilitic children was also considered. Dr. Kirkpatrick recommended the use of N.A.B. even in young infants, and detailed the history of several patients treated. His remarks were illustrated by lantern slides of charts of the women and children treated.

Dr. GIBBON FITZGIBBON said that before a department for the treatment of venereal diseases had been started in Dublin, he had treated many cases of syphilis with intravenous injections of N.A.B., and he had found that nearly always if he treated during pregnancy a woman affected with syphilis and whose W.R. was positive the child was born alive, and generally without any evidence of the disease. From time to time patients turned up at the Rotunda with a history of repeated death of the fœtus, who, when examined, showed absolutely no cause for the death of the fœtus, but when a Wassermann test was done it proved fully positive. After this, during the next pregnancy, these patients were treated with N.A.B. injections, and had living and perfectly normal children. The children were normal at any rate at birth, but of course it was very hard to follow up their subsequent history. Recently a woman had come back to the hospital who had been treated with N.A.B. injections during the previous pregnancy two years before, and the child had been born living and healthy, and had remained healthy since. Dr. Kirkpatrick's descriptions of the cases of syphilis which he treated conformed with his experience of cases which he had treated at the Rotunda Hospital.

Dr. L. L. CASSIDY said it would be interesting to know why so many cases aborted before the fourth month of pregnancy, and yet most careful examination of the patients showed no signs of syphilis whatever. In his experience not more than 3 per cent. of those mothers gave a positive Wassermann reaction. The main mortality during pregnancy in syphilitic patients seemed to occur after the fourth month, and very often in cases in which there had been no primary symptoms whatsoever. One sometimes came across patients with syphilis which only developed at the age of about 45 or 50, when the menopause took place. He thought that this type of syphilis was a very important one, and one which should be recognised in gynæcology. He would be glad to know if, in Dr. Kirkpatrick's opinion, in cases of death of the fœtus before the fourth month of pregnancy the carrier of infection could be the spermatozoa.

Dr. V. M. SYNGE was interested to hear that Dr. Kirkpatrick did not consider congenital syphilis was very infectious. He, personally, thought that it was. Dr. Kirkpatrick had also said that a child with congenital syphilis had its general resistance lowered, and was very likely to get infected with tubercle bacilli and other bacteria. He himself had seen a large number of cases of congenital syphilis, and he had never seen one which had developed tuberculosis. He asked whether cases which did not show any obvious clinical signs of syphilis, which were apparently quite healthy and yet in which the blood Wassermann was positive and the cerebro-spinal fluid negative, should be considered as being affected with syphilis, and if such cases should be vigorously treated in the same way as cases which had definite symptoms of congenital syphilis. He also asked how much N.A.B. should be given to children with congenital syphilis and how long the injections should be continued. Should mercury be given as well, or was N.A.B. alone sufficient for every case? If after treatment for some time the patient's W.R. remained negative, was it justifiable to say that that patient was cured? He, personally, did not think it was. He thought the only real test was if the child in after life developed syphilis. Could a woman with active signs of syphilis give birth to a healthy child?

Dr. **Pugin Meldon** said that when a woman came to him just after pregnancy for treatment he continued treatment with arsenical preparations, and he made every woman nurse her child, as he found that, although the arsenic was not excreted in the milk, some substance was excreted which had a beneficial effect on the child.

Dr. J. W. **Bigger** said that as a pathologist the point that interested him most was the results of blood-tests which were performed on cases of congenital syphilis. The figures mentioned by Dr. Kirkpatrick were extremely convincing of the good results of the treatment of syphilis. He, personally, was of opinion that the W.R. in cases of congenital syphilis was just as reliable as in the cases of ordinary syphilis, and he did not think that there was really much difference between congenital and acquired syphilis. The tendency in congenital syphilis might be to get longer latent periods than in acquired syphilis, and during the latent period in either disease one might get a negative W.R., but this certainly did not mean that the patient was cured, and in cases of congenital syphilis it was necessary to keep a watch on the patient longer than was necessary in cases of acquired syphilis In cases where the W.R. was considerably positive (and where one felt sure that no error had been made), and especially if there was a consistently positive sigma reaction, the case should be regarded with the greatest suspicion, and should be given the benefit of treatment by one of the arsenical derivatives.

Dr. W. C. **MacFetridge** said that lesions of congenital syphilis were often found at an advanced age, though many people held that they were not found after the age of 20. In connexion with ocular lesions one found them frequently in patients up to 60 years of age. Dr. Kirkpatrick, in his paper, attached great importance to treatment by arsenical preparations. At the Eye and Ear Hospital, although a great many of these cases were seen, patients with iritis, &c., very few of the surgeons at the hospital used arsenical preparations when treating these cases. He, personally, had never used them. This, however, was a point about which there was a great diversity of opinion. Some people in the treatment of ocular lesions said that arsenical preparations were of great value, while others said that they were of no use at all. He wondered if it was safe to treat cases of optic neuritis and optic atrophy with arsenical preparations; some ophthalmic surgeons said that in such cases arsenic should certainly not be used. He, personally, thought it would be safe to use them if the man who was giving them was very experienced in their use. Mercury was of great aid in the treatment of optic cases.

Mr. R. R. **Leeper** said that the question of the latency of syphilitic infection was an interesting one. One sometimes found patients who had had syphilis and remained pretty well after treatment, although not cured. These patients sometimes had healthy families, with no sign of mental disease, but yet years after the patient developed G.P.I. He wondered where the spirochæte was in the body during all these years. In G.P.I. patients spirochætes would be found all through the brain, but not in the spinal fluid.

Dr. R. H. **Micks** said that it was in the treatment of very young infants that most difficulty was experienced, as it was so hard to find a vein to inject the arsenic into. He had found milk injections very helpful, also mercury.

Dr. **Kirkpatrick** said, in reply, he agreed with Dr. FitzGibbon that it was very difficult to trace the source of infection in women who had syphilis and who produced syphilitic children. He thought that probably the syphilitic lesions were suppressed, especially in women who were pregnant. It was noticed that women who had syphilis often improved very much in their syphilitic conditions when they were pregnant. The question of how the infection was carried to the fœtus was a very difficult one. If a woman became affected with syphilis only at the times of pregnancy, the course of disease was greatly modified, and sometimes stopped altogether. It would be impossible to lay down definite rules about the length of time for which N.A.B. injections should be given. As long as the patient's W.R. was positive, and as long as the injections had no bad effects, he would give at least three courses of injections and perhaps more. If after this the W.R. was still positive, it generally meant that treatment would not do any good in that particular case. It was also impossible to lay down definite rules as to whether the giving of N.A.B. did harm to patients with optic atrophy and optic neuritis or not. In some cases perhaps it did, but he had seen some cases in which it had done a great deal of good.

SOCIETY FOR THE STUDY OF INEBRIETY.

At a meeting of this Society on April 8th, with Mr. C. J. Bond, F.R.C.S., in the chair, Dr. **Bedford Pierce** delivered an address on Mental States in Alcoholism, an abstract of which we publish on p. 841.

In the discussion which followed the paper, Sir **Robert Armstrong-Jones** said that while questions of ætiology were very difficult in general diseases such as arterio-sclerosis and nephritis, they were even more difficult in mental disease. He considered that alcohol was an important cause of insanity, that chronic delusions of a sexual nature were always due to alcoholism, and that paramnesia was invariably of alcoholic origin. Alcohol was first a stimulant and then tended to remove the inhibitions and restraints imposed by education. He objected to the limitation of instincts to the three mentioned by the lecturer—herd, ego, and sex—and was disposed to think there were as many instincts as primitive desires. Sir Robert Armstrong-Jones quoted the Commissioners of the Board of Control, who called alcohol "brain poison," and said that in his experience at Claybury, 20 per cent. of the male and 10 per cent. of the female admissions were clearly attributable to alcoholic indulgence.

Dr. **Percy Smith** referred to the fact that alcoholism was responsible for a large proportion of the most dangerous patients under care. He spoke of the crimes committed in automatic unconscious states, and of the difficulty of persuading legal authorities that such things could occur. He also spoke of the failure of the Inebriate Acts to control persons addicted to drink, and of the dangerous practice of giving alcohol to children, at the risk of their addiction to it in later life.

Dr. W. **Asten** mentioned the irritable disposition met with in many inebriates, and the difficulty of discussing treatment with them without giving offence. He asked whether this touchiness preceded or followed the alcohol addiction.

Dr. W. M. **Feldman** remarked that among Jews alcoholism was rare, while mental disorder was relatively common. On the other hand, there was reason to believe that mental deficiency, prostitution, and alcoholism were all recessive Mendelian qualities; and this suggested some connexion between them.

Dr. T. N. **Kelynack** alluded to the influence of suggestion in producing results. In many experiences where alcohol was commonly considered to be of service it seemed probable that the mere drug action of alcohol played but a minor part. Generally speaking, he believed that many of the medico-sociological advantages claimed for the use of alcohol, both in health and disease, were really due to the psychological action of so-called suggestion.

Reviews and Notices of Books.

THE LAW RELATING TO LUNACY.

By Sir HENRY STUDDY THEOBALD, K.C., M.A., Hon. Fellow of Wadham College, Oxford; lately a Master in Lunacy. London: Stevens and Sons. 1924. Pp. 890. £2 10*s*.

WELL-ESTABLISHED legal text-books renovated in successive editions cover so much of the ground over which lawyers have to travel in the practice of their profession that it must demand no little courage on the part of the author to become, as it were, the founder of a new one. The courage of Sir H. S. Theobald, handicapped by blindness, needs no comment, but rather the recollection that his qualification for his task is derived from 15 years' experience as a Master in Lunacy, following upon many years of practice at the Bar. His example will long be remembered. The work he has compiled, shorter by about 150 pages than the monumental "Archbold," contains all that is essential for the lawyer's guidance in studying any but the most abstruse points in connexion with lunacy law and practice, and he has found space for the introduction of interesting references to the history of his subject. Medical practitioners, however large their liabilities may appear to bulk at the present date, are chiefly concerned with lunatics as patients, after certification has taken place, and they will find all that they need know as to the legal position of lunatics clearly set out and explained in chapters on the care and treatment of the insane, including one entitled Miscellaneous Provisions. If they care to glance at the non-essential pages of the book they may be interested to trace the origin briefly outlined of the Royal prerogative now exercised by the Lord Chancellor, and having its probable source in rights over the property of the mentally defective summarily taken from the feudal lords by Edward I., or they can study the evolution of legal patronage in a chapter on the Masters in Lunacy, the office held from 1907 to 1922 by the author. It is not more than 65 years ago that Master Winslow was said to have "had peculiar views as to the proper destination of committees' balances in which the Lord Chancellor did not concur. Master Winslow resigned." His successor, too, was unfortunate. Sidney Herbert wrote to Mr. Gladstone, "Poor Thesiger has got into a dreadful mess in appointing his son-in-law (little Higgins) a Master in Lunacy." Master Higgins, who held office for two months only, was a clerk in the Colonial Office, whose legal qualifications were confined to his having married the Lord Chancellor's daughter! However, Sir Henry Theobald is charitable in his observations on the exercise of patronage which "savoured of excessive zeal in the service of relatives or friends," and observes that outside critics rarely know all the conditions of what may seem at first sight to be a political job. "Even Lord Chancellors," he suggests, "deserve the benefit of the doubt." One of the best known names among those of former masters, to students of Victorian literature, was, of course, Samuel Warren, author of "Ten Thousand a Year" and "The Diary of a Late Physician." "It has been said," writes Sir Henry Theobald, "that he drew a good deal of the latter book from the contents of affidavits in lunacy. Unfortunately for the story the book was published before he became a master."

DER AMYOSTATISCHE SYMPTOMENKOMPLEX.

By Dr. A. BOSTROEM, Privatdozent for Psychiatry and Neurology in the University of Leipzig. Berlin: Julius Springer. 1923. Pp. 205. 7*s*. 6*d*.

A RECENT edition to the excellent series of monographs in neurology and psychiatry edited by Profs. O. Foerster and K. Wilmanns is devoted to a consideration of the syndrome called by Strümpell "amyostatic," a term indicating sufficiently a "muscular astasia"—i.e., involuntary movements—with the corollary, variation in muscular tonicity. Dr. Bostroem, accordingly, is concerned with athetosis, chorea, and what he designates the "Parkinson-Westphal-Strümpell-Wilsonsche Krankheitsgruppe" in a somewhat omnibus fashion. Characterised by much erudition and a due appreciation of the contributions of others, this monograph is suggestive and thought-provoking in its main outlines, though its division of the amyostatic complex into the three groups of chorea, athetosis, and the above-mentioned disease class is obviously open to criticism. Further, some of the author's statements in reference to what he calls, briefly, "Parkinson-Wilson" are misleading if not erroneous—e.g., he holds that "involuntary spontaneous movements" are wanting in that group—a curious reading of the facts. The view that associated movements do not occur in the same class of case is also misleading if, as appears, the implication is that they are present or increased in the others, and that this may be used as a means of differentiation.

LE CERVEAU ET LA PENSÉE.

By HENRI PIERON, Professor at the Institute of Psychology of the University of Paris. Paris: Felix Alcan. 1923. Pp. 326. Fr.10.

THE age-old problem of the interrelation of brain and mind is approached afresh by Prof. Pieron in succinct and readable fashion. Undeterred by the trend apparent in certain quarters towards a complete cleavage between mind and its organ, he pleads for a closer approximation of physiology and psychology, pointing out with truth how frequently the exponent of the latter science is unfamiliar with the data of neuro-physiology and the rich material of the neurologist. He would have a dynamic psychology taking its place in the comity of the sciences, collecting and examining objectively the finest and most delicate reactions of cerebral activity. Chains of neurones form without question the "functional circuits" of thought, and within them exist systematised "groups" suggesting the reality of "centres" of a psychological order. The application of physiological method can illuminate not a few processes commonly called "mental"; this is particularly the case with the phenomena of speech. Prof. Pieron reaches no special conclusion, and studiously avoids any type of special pleading; but no reader of unbiased mind will fail to appreciate the force of his contention, that the activities of the human mind should be investigated from the physiological side no less than from the psychological.

THE UNSTABLE CHILD.

An Interpretation of Psychopathy as a Source of Unbalanced Behaviour in Abnormal and Troublesome Children. By FLORENCE MATEER, A.M., Ph.D., Psycho-clinician in the Ohio Bureau of Juvenile Research. London and New York: D. Appleton and Co. 1924. Pp. 471. 10*s*. 6*d*.

DR. Mateer has passed beyond the optimistic assurance that a diagnostic classification or a mental age test, of which the Simon-Binet stands as a type, is more than a reliable means of systematising observation. The problem of the psychopathic child is different from that of the feeble-minded, for educational or social crises occur in individuals whose mental age may be equal to or above the physical age. This book is an account of the work done and difficulties met in the Bureau to which the author is attached, and it rouses an uncomfortable feeling that in this country such work is almost non-existent. The author holds out the promise that, however great may be the needs and difficulties, the psychopathic child has potentialities and will repay care as no feeble-minded can. But this care involves more than correctional treatment carried out without understanding of the condition. Of such treatment she writes: "We check his reactions, add another load of fear, worry, shame, resentment, more inferiority, and new grievances against all in authority. . . . It is only the elasticity and resiliency of the child mind which keeps any of them from a re-enforced and more extreme type of behaviour."

The subject is handled on broad lines. It indicates the scope of the book when Dr. Mateer presents evidence that congenital syphilitics show a recognisable type of psychopathy peculiar to themselves, while she takes full advantage of whatever modern psychological methods have to offer in the study of individual cases. There is a pleasing modesty throughout the writing; the author makes no attempt to disguise the many perplexities, and yet offers plenty of useful material and observation.

St. Elizabeth's Hospital.

Clinics and Collected Papers of St. Elizabeth's Hospital, Richmond, Virginia. Vol. I., contributed by the Staff. London: Henry Kimpton. 1923. Pp. 560. 37*s.* 6*d.*

This book contains 66 papers written by the staff of a small hospital which only includes six medical members. It therefore represents a large output from individuals. A feature is the collection of articles on the management of the hospital. A great deal of thought has obviously been given to this side of the subject, an example which might well be followed by many nursing homes in this country. Only a few of the scientific papers have appeared elsewhere. They cover a very wide range of subjects, and a breadth of view runs through them which is undoubtedly related to the fact that extreme specialisation, such as has occurred in some hospitals, does not exist at St. Elizabeth's. The book is well illustrated and repays perusal.

Junior Regional Geographies.

Book III. The Regions of the World. By W. H. Barker, B.Sc., F.R.G.S.; and Leonard Brooks, M.A., F.R.G.S. London: University of London Press. 1924. Pp. 272. 2*s.* 9*d.*

This is the third of a useful series which, when completed, will form a general regional study of the world as a whole. All practised teachers agree that before attempting to impart detailed knowledge of continents and regions, their pupils should obtain some general notion of the world in which these continents are set. This volume gives a very good idea of the world as a living unit, and will be of use not only to the young pupil but also to the adult whose grasp of the relations and interrelations of the world is not as fresh as it was; indeed, quite advanced workers along special lines will find here useful information when they come to think of their subjects internationally—and this is the spirit in which many pathological problems must now be approached. Chapters on the industrial regions of Europe and of North America are especially valuable. Nearly one hundred well-chosen illustrations enhance the text.

Internal Derangements of the Knee-Joint.

By A. G. Timbrell Fisher, M.C., F.R.C.S. Eng., Surgeon (with Charge of Out-patients), Seamen's (Dreadnought) Hospital, Greenwich; Assistant, Surgical Unit, University College Hospital, London. London: H. K. Lewis and Co., Ltd. 1924. With 80 illustrations. Pp. xii. + 144. 12*s.* 6*d.*

In this monograph the author has presented his subject after a critical re-investigation of the fundamental, anatomical, and pathological principles which underlie the lesions grouped under the heading of internal derangements of the knee. The first part deals with the pathology and surgery of the semilunar cartilages and constitutes a safe and sound essay in itself. In the second part other varieties of internal derangement are considered, and in this section is incorporated much of the valuable original work recently carried out by the author in connexion with the pathology of loose bodies, and the pathogenesis of osteoarthritis.

The monograph deserves high commendation. To the author's own exceptional knowledge of the anatomy and pathology of the whole subject is added—in the form of foot-notes scattered throughout the book—a wealth of clinical experience derived from Sir Robert Jones. Sir Arthur Keith writes a foreword.

JOURNALS.

Journal of Physiology. Edited by J. N. Langley, Sc.D., LL.D., F.R.S. Vol. LVIII., Nos. 4 and 5. Cambridge University Press. March, 1924. Pp. 259–372. 10*s.*—Chelonian Respiration (Tortoise), by Thomas Lumsden. The author finds that the respiratory centres in this animal are the gasping centre at the apex of the calamus scriptorius, the expiratory centre just above this, and the apneustic centre above the level of the fourth ventricle. There is no evidence of the existence of a pneumotaxic centre, and the vagi do not appear to have any tonic-regulating effect on the respiration. Moreover, the respiratory needs of the tortoise are so slight that under ordinary conditions a single inspiration may last for two to three hours. The respiratory rhythm is more powerfully affected by variations in the temperature of the cells composing the respiratory centres than by variations in the activity of the general metabolic processes or in the gases respired. When, however, the temperature is constant, the amount of CO_2 in the blood appears to be the chief factor in the regulation of normal respiration.—G. V. Anrep and H. N. Kahn deal with the metabolism of the process of reconstruction of the submaxillary gland in the dog. They find that the recovery of an exhausted gland under normal conditions is a slow process; it takes three days for the gland to recover completely after a large secretion. Paralysis of the secretory fibres of the chorda tympani by atropine does not influence the rate of recovery. The recovery of the gland after extirpation of the superior cervical ganglion is accelerated. The experiments do not support the theory that the sympathetic nerve has any "trophic" influence on the submaxillary gland under normal conditions.—The Mutual Influence of Secretory Stimuli in the Submaxillary Gland of the Cat, by E. E. Goldenberg. In anæsthetised cats, two successive stimuli were applied to the gland itself, to its nerves, chorda, and sympathetic, with variation of the length of the interval of stimulation. Augmented secretion can be obtained by successive stimulation of the same or of the two secretory nerves, and an augmented vaso-motor effect—dilator or constrictor—can also be obtained by two successive stimulations of the same nerve.—P. M. Jurist and B. A. Rabinovitch find that the excitability of both sympathetic secretory and vaso-motor fibres of the submaxillary gland of the cat after section of the nerve in the neck is lost in from 41 to 48 hours.—The Nerve Fibre Constitution of the Nerves of the Eye, by M. Nakanishi. In the cat and sheep most of the post-ganglionic ciliary nerve fibres are somewhat larger (3·6–4·5μ) than the pre-ganglionic fibres (about 3μ). The nerves entering the ocular muscles have fibres of all sizes from 3μ to 17μ. The relative number of the fibres of different size is not very different, but the 3–6μ fibres are rather fewer than either the 6–5–10·5μ or 11–17μ fibres. The relative number of medium-sized fibres is greater than in the anterior roots of the spinal nerves. The greater part of the non-myelinated fibres of the sixth nerve run to the retractor bulbi; all the nerves entering the striated muscles have a few non-myelinated fibres; non-myelinated fibres also run to the eye by the long ciliary nerves; most of the non-myelinated fibres can be traced to blood-vessels.—Variations in the Sensibility to Pressure Pain Caused by Nerve Stimulation in Man, by R. C. Shawe.—The Effect of Insulin on the Oxygen and Carbon Dioxide Tensions in Air between the Skin and the Muscles, by J. Argyll Campbell and H. W. Dudley. Atmospheric air was injected under the skin of an unanæsthetised rabbit and left there until the CO_2- and O_2-tensions had come into equilibrium with the tensions of these gases in the tissue spaces. In the case of CO_2 this occurred in about an hour, the tension being at about 40 to 50 mm. Hg. The O_2-tension equilibrium was not established until 36 hours after, when the tension was 20–30 mm. Hg. Equilibrium once established the tensions usually remained fairly constant for one animal over long intervals of time—months. It was found that after subcutaneous injection of insulin in normal rabbits that the curve for O_2-tension in air between the skin and the muscles follows the blood-sugar curve; the effect appears to be localised, and is not due to constriction of blood-vessels. Insulin also causes an increase of CO_2-tension in the same region, which lasts as a rule only a couple of hours.—On the Blood Phosphate After Insulin Convulsions, by L. B. Winter and W. Smith. It is known that the inorganic blood phosphate is diminished as a result of injecting insulin into rabbits, and this fall also occurs in the treatment of diabetes mellitus in man by injection of insulin. Animals may be recovered from insulin convulsions by means of glandular extracts. The authors have made a careful study of the inorganic blood phosphates after insulin convulsions in rabbits. These animals can be recovered from convulsions by means of glucose, adrenalin, adrenalin and thyroid extract together, and pituitary extract. After adrenalin the inorganic phosphate usually regains the normal level quickly, but falls again. After pituitrin the effect is variable. After glucose the normal value is not regained for a considerable period.—Mitral Insufficiency, by D. T. Barry. The author has studied mitral lesions in the dog, using the heart-lung preparation, but this communication deals chiefly with a case of heart affection in the human subject. The paper is illustrated by some normal and abnormal optical records of the heart, and venous and arterial pulses are shown from human beings and from the heart-lung preparation of the dog. Records of mitral regurgitation in man offer evidence of leakage occurring in the early or so-called presphygmic period of systole. Those of artificial lesion in the dog afford similar evidence. The volume of fluid regurgitated is in some measure accountable for the time in which back-flow occurs, and this is especially so when the difference between auricular and ventricular pressures is marked. Some evidence is provided that the auriculoventricular valves are finally sealed as a result of the ventricular pressure. A mechanical explanation of the condition of pulsus alternans by alternating efficiency of the mitral valve is suggested without prejudice to the view that it may occur from inherent fluctuation of muscular function.—Some Variations of Capillary Diameter and Antidromic Action chiefly in the Web of the Frog's Foot, are recorded by Soroku Oinuma.—Other papers include the Interrelation of Parathyroids, Suprarenals, and Pancreas, by G. A. Clark, in which some interesting observations on the actions of guanidine on the blood-sugar in rabbits, the antagonism between it and calcium, and the results of parathyroid administration when given with guanidine or some time before. Three papers on muscular work—viz.: the Maximum Realisable Work of the Flexors of the Elbow, by T. E. Hansen and J. Lindhard; the Effect of Fatigue on the Relation between Work and Speed in Contraction of Human Arm Muscles, by A. V. Hill and others; on the Influence of Speed on the Mechanical Efficiency, by E. P. Cathcart and others. together with two papers on Renal Secretion—Secretion as a Factor in Elimination by the Bird's Kidney, by E. B. Mayrs; and Localisation of Excretion in the Uriniferous Tubule, by J. M. O'Connor and J. A. McGrath.

BRAIN. Vol. XLVI. Part 3.—The Pathology of the Parkinsonian Syndrome following Encephalitis Lethargica, with a note on the Occurrence of Calcification in this Disease, by Douglas McAlpine. The histological findings in two cases are described; subacute inflammatory changes and recent perivascular hæmorrhages were found. The substantial nigra was implicated in one but not in the other case. Calcification in the anterior part of the globus pallidus was found in six cases of encephalitis lethargica, in one case as early as the fourth day of the disease.—On Variations in the Form of Reflex Movement, notably the Babinski Plantar Response, under Different Degrees of Spasticity and under the Influence of Magnus and De Kleijn's Tonic Neck Reflex, by F. R. M. Walshe. In the presence of a high degree of extensor hypertonus the hip and knee components of the flexion reflex were reduced very considerably, while the Babinski plantar response was less affected. Rotation of the head towards the hemiplegic side, increasing hypertonus, leads to shortening of the extensor response or may even abolish it; this is rightly claimed to be a point of practical importance.—On Cerebellar Localisation, by Sven Ingvar. This is a valuable review of recent work together with a record of two original cases. The author divides the cerebellum into three lobes—anterior, middle, and posterior. The ponto-cerebellar fibres pass to the middle lobe, the spino-cerebellar and the vestibular fibres to the anterior and posterior lobes. A regional representation has been demonstrated only in the middle lobe, the anterior part of which is related to the upper limb and the posterior to the lower. The functions of the anterior and posterior lobes are related to the body as a whole and not to any special segment of it. The paper gives a good impression of the way in which the problem of the cerebellum has been attacked in recent years along the paths of anatomy, comparative anatomy, embryology, physiology, and pathology.—The Occurrence in Osteitis Deformans of Lesions of the Central Nervous System, with a Report of Four Cases, by W. G. Wyllie. In two cases the disease produced so great a narrowing of the spinal canal that a compression paraplegia resulted; this was relieved by laminectomy in one case. Optic atrophy without any other change in the fundi is recorded in two further cases.

Public Health Services.

MENTAL HOSPITALS SERVICE.

MANY important structural improvements, some now in progress and others to be undertaken during the present year, are referred to in the annual report for 1923 of the *City of London Mental Hospital, Dartford*. These include new verandahs, a dining hall for the staff, an additional ward for acute cases, an operating theatre, an X ray plant, and a laboratory. As in former years, parole has been granted on an extensive scale, no less than 86 patients being given outside parole, and 54 leave of absence for varying periods. Another interesting feature of the life of this hospital is the conduct of the church services; the choir and congregation are partly composed of visitors from outside, a circumstance naturally regarded as preventing patients from feeling that they are cut off from the general community. A further step has been taken in encouraging mixing of the sexes among the patients in the church, instead of placing the women on one side of the aisle and the men on the other. The malarial treatment of general paralysis has been tried in eight cases, and, although no definite conclusions as to its efficacy were arrived at, three of these patients have since been discharged. This treatment was also employed in 27 cases of dementia præcox. Some improvement was noted during the pyrexial stage, but "when this was terminated by quinine the patients relapsed into their former state." It will be extremely interesting if this treatment is found to influence any other disease than general paralysis, but the fact that syphilis and malaria are both due to protozoa, affords some sort of rational basis for its employment in general paralysis, whereas in other varieties of insanity the mere effect of fever per se offers the only hypothesis as to its possible action.

There are many mental hospital reports which consist almost entirely of statistics, but there is only one which consists solely of the medical superintendent's report, the feature to which the reader looks for insight into the working of an institution. This is the annual report of the *Royal Hospital, Morningside, Edinburgh*, and Prof. G. M. Robertson, in describing its work in 1923, deals, as usual, with a number of problems which are engaging the attention of the profession and of the public. Several changes have taken place or are contemplated at Morningside. The proposal that an out-patient clinic should be established there has been modified; in order that no prospective patient shall be deterred by an aversion for asylum associations, this clinic is to be established at the Royal Infirmary under the direction of Prof. Robertson, and a social worker is to be employed. If legal difficulties can be overcome, it is hoped to establish in the near future a psychopathic hospital for voluntary patients; this will be on the Morningside estate, but with a separate entrance, and otherwise distinct from the existing institution. The value of coöperation with the University is also illustrated in a new arrangement whereby in exchange for a grant towards a lectureship in neuro-pathology, the professor of pathology in the University will direct the work of the Morningside laboratory. A series of cases of general paralysis has been treated, with satisfactory immediate results, by malaria inoculation, and it is next proposed to treat this disease with tryparsamide, the General Medical Council having asked the hospital to investigate the utility of this drug. The recent decline in the admissions of general paralytics has been maintained, and Prof. Robertson offers an ingenious explanation of the fact that this decline has been greater among females than among males. Among the questions of more general interest treated in the report are criminal responsibility, the limitations of Christian Science and spiritual healing, the experience of hallucinations by sane persons, and the dangers of "spiritualism." In connexion with the latter, Prof. Robertson points out that not only are people made insane by spiritualistic practices, but undoubtedly the converse may take place, an individual may be drawn to spiritualism as a means of accounting for abnormal mental experiences which are being passed through. A vivid example of the former class, the "Monomania of Unseen Agency," is described, in which the patient having attempted by various means, and with no very serious purpose to "get into communication with the unseen," began to be tormented by voices, and eventually suffered from confirmed hallucinations of almost every sense. Such cases, which are not by any means rare, should be a warning of the danger which spiritualism involves for anyone with a latent tendency to nervous disorders. The hospital runs a journal of its own, and the "Morningside Mirror," several recent copies of which have reached us, maintains its high standard of topical and literary interest.

In the annual report for 1923 of the *Glengall Mental Hospital, Ayr*, the medical superintendent, Dr. G. Douglas McRae, again deplores the delay which commonly takes place before sending mental cases for treatment. Of the admissions in the year under review, only 16 per cent. of the men and 7 per cent. of the women arrived within three months of the onset of their illness, and in many cases the duration of the illness before admission was much longer. Apparently the euphemisms "neurasthenia" and "nervous breakdown" often embody the excuses offered by relatives for the delay in these cases. On the other hand, he deplores the certification of advanced senile dements, who not uncommonly die within a few weeks or months of admission. "It seems pitiable that such cases of senile dissolution cannot receive nursing attention in their own homes." A marked improvement in the average standard of physical health at the time of admission is greeted with less enthusiasm than might at first be expected, on the ground that "an unhealthy mind in a healthy body is found by experience to be a very incurable form of insanity." There is, however, "an unusually large proportion of decrepit and bed-ridden cases" in the hospital, and the death-rate from tuberculosis is more than doubled. No mention is made of the extent or existence of facilities for isolating these cases. A very pleasant innovation is a nine-hole golf course which has been laid out in the grounds during the year.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 12TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week, namely: Small-pox, 122; scarlet fever, 1522; diphtheria, 654; enteric fever, 44; pneumonia, 1853; puerperal fever, 43; cerebro-spinal fever, 7; acute poliomyelitis, 2; acute polio-encephalitis, 1; encephalitis lethargica, 206; dysentery, 6; ophthalmia neonatorum, 120. No cases of cholera, plague, or typhus fever were notified. The cases of encephalitis lethargica were notified in the following counties: London, 23; Chester, 5; Derby, 10; Durham, 6; Essex, 8; Gloucester, 9; Lancaster, 25; Middlesex, 4; Northumberland, 10; Nottingham, 4; Stafford, 5; Warwick, 30; Yorks, W.R., 47; and elsewhere in smaller number.

Deaths.—In the aggregate of great towns, the deaths from influenza fell from 403 to 316. In London the deaths from diphtheria fell to 6, and those from measles, which had been 62 in the preceding week, rose to 66 last week. The deaths from influenza in London further fell to 28 last week.

New Inventions.

TWO NEW SWAB FORCEPS.

Two patterns of forceps which I find very useful—one a spring swab forceps (Fig. 1) and the other bow-handled (Fig. 2)—have recently been made for me. Aided by an ordinary dressing forceps they are used to pick up and squeeze out moist pledgets. They have been designed primarily to replace the fingers when dressing wounds, obviating thereby (1) the necessity for gloves when doing this, and (2) the danger of contaminating the lotion by repeated immersions of the bare hand, as is so often done. At operations they are useful for manipulating mops or for picking up such vulnerable tissues as a loop of intestine or the appendix. For the latter purpose the gripping surface is best provided with wide grooves. The bow-handled forceps is provided with ratchets to enable a swab once gripped to be retained so that it may be laid aside and picked up again as the operation proceeds. The essential element in the spring swab forceps is the lightness of its spring, which should respond to the least touch and not tire the fingers at all. These forceps may well be made of rustless steel.

FIG. 1.

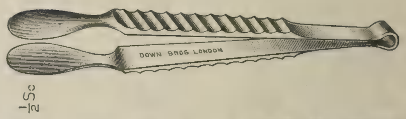
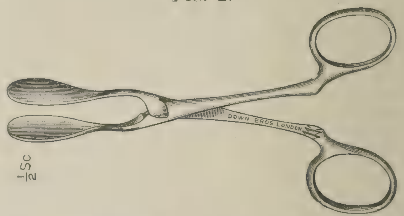


FIG. 2.



Messrs. Down Bros., London, are the manufacturers.

Colombo, Ceylon. R. L. SPITTEL, F.R.C.S. Eng.

The Conduct of Medical Practice.

A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.

XVI.—MEDICAL SECRECY.

BY HUGH WOODS, M.D.,
GENERAL SECRETARY, LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

> "If ever you betray what you are entrusted with, you forfeit my malevolence for ever; and your being a simpleton shall be no excuse for your locality."
> —SHERIDAN, *The Rivals*, Act i., Scene 2.

IF a man promises to keep secret the information which is imparted to him, and fails to do so, he is rightly regarded as untrustworthy or dishonourable. Patients, when consulting their medical advisers, do not ask for a promise of secrecy, because it is understood that medical practitioners are, in any case, pledged to keep secret what comes to their knowledge through the practice of their profession. Were it not so, patients would no doubt make a rule of exacting a pledge of secrecy from their medical attendants beforehand. A medical practitioner must consequently be regarded as bound by an implied promise of secrecy unless he has definitely informed his patient beforehand that he will not accept this obligation. It is, however, rightly assumed that a patient is aware that his doctor is legally bound to report cases of infectious disease to the proper authorities, to give a certificate of the cause of death, and, in general, to give such information as he is by law required to give. Apart from legal compulsion, the obligation of secrecy is absolute, and is one which admits of no laxity.

Where Secrecy is Conditional.

The only circumstances under which any violation of the rule of secrecy should be contemplated are those which may sometimes occur when the maintenance of secrecy would allow a crime to be committed which could be prevented by a departure from the rule. In such a case the patient should first be definitely warned that secrecy will only be maintained if this can be done without the crime being committed. If this warning is disregarded, the medical adviser is placed in a very difficult position. The patient may repudiate altogether the intention which he has previously admitted, and, in the absence of clear legal evidence of such intention, the medical adviser may find himself charged with libel or slander of a very grave kind as a result of his departure from the rule of secrecy.

In Cases of Venereal Disease.—It has been contended that when a man, who is known by his medical adviser to be suffering from syphilis in an infectious stage, is about to marry, a warning ought to be given to the woman who might otherwise innocently contract the disease. The wickedness of such procedure should be plainly impressed upon the patient, but it is not the duty of the doctor to give information of his patient's condition, and the objections to his doing so outweigh the considerations which might lead him to try to prevent the marriage by disclosing what has come to his knowledge professionally. If such breach of secrecy were right and proper, it ought to be openly authorised by the rules of the medical profession; since otherwise a medical man when incurring serious risk from a sense of duty is prejudiced by an apparent breach of faith to his patient, who, under present circumstances, would certainly regard it as such, and not without reason. The objections to any refusal to observe secrecy in cases of the kind render it altogether inadvisable. A patient, who was capable of the conduct indicated, would consult someone—probably not medically qualified—who would have no scruples about keeping the matter secret, and patients, who would otherwise have been guided by their doctors as to the avoidance of risk, would also be afraid of taking into their confidence medical advisers whom they felt unable to trust. If a medical adviser is justified in divulging the fact that a patient has syphilis, why should he not give information when a patient is about to marry who would in his opinion not be likely to have healthy children, or is a drunkard, or otherwise objectionable? Obviously such procedure would soon bring a medical practitioner's career to an ignominious end, and do vastly more harm than good.

In Cases of Criminal Conduct.—It not infrequently comes to the knowledge of a medical man, in his practice, that a patient has been guilty of criminal conduct; and some would contend that he becomes to some degree an accessory if he fails to give information to the police. Called to attend a patient suffering from the results of criminally procured abortion, it may be said that secrecy on the part of the medical attendant tends to the encouragement of this offence; but so, to some extent, does his success in mitigating the consequent illness of the patient. If the doctor could not be trusted, the patient would try to deceive him, notwithstanding the grave danger to herself if she succeeded. In fact, cases do occur in which this happens even under present circumstances. It is justifiable, although not a definite duty, to urge the patient to give evidence voluntarily against a person who has procured abortion for her, but, without her free intelligent consent, her medical attendant should not betray the confidence reposed in him in order to check criminal practices of the kind.

In the Case of Death, the law does not permit secrecy, and it cannot be maintained. Even then it not uncommonly will happen that legal proof of criminal abortion will be wanting, and resentment will be aroused against the doctor for bringing discredit upon his deceased patient. Where death has not occurred a statement that abortion had been criminally induced, if not capable of strict legal proof, might involve the doctor in an action for damages for slander, or libel, and such action, if successful, would, in view of the betrayal of confidence involved, probably entail vindictive damages.

Information Desired by Interested Parties.

Employers, solicitors, insurance companies, and others frequently apply to medical practitioners for information about patients, for which they offer payment. Information should never be given without a patient's consent, or in the case of a deceased patient, that of the proper representative. An employer asks a doctor to see a man employed by him, and undertakes to pay the fee. He then asks for the doctor's opinion of the man's state of health, and it may thoughtlessly be given to him. If, as a result of this, the man is discharged, the action of the doctor will be strongly resented, and, if the diagnosis can be called in question, an action for damages may be the consequence. Even though the communication is privileged, there is risk of the protection thereby afforded being ineffective on the ground of legal "malice." Juries sometimes find that there was malice on strangely inadequate grounds, when their sympathies are with the plaintiff, as they often are in these cases. For instance, the medical officer of a friendly society forwarded to the friendly society a certificate implying that the ailment from which a patient was suffering arose from his misconduct. The patient was, by the rules of the friendly society, deprived of the payment which he would otherwise have received. He brought an action for damages, and the jury found, on very unsatisfactory medical evidence, that the doctor's diagnosis was wrong. The judge ruled that the certificate was a privileged communication, but the jury found that there was malice on the doctor's part, and damages were given against him. The evidence on which the jury found that there was malice was to the effect that the doctor and his patient had, several years previously, taken opposite sides in a controversy in a local newspaper. This showed how little trust can be safely placed in the protection afforded by privilege. To avoid the risk thus involved by giving a certificate that may cause loss or damage to a patient, the certificate should be handed to the patient, so that he can forward it or not as he chooses. If he does not forward the certificate, the medical practitioner is not responsible for any consequences arising from the absence of a certificate, and, if it is forwarded by the patient, the certifier has not published it to a third party, and therefore, even if it were a libel, no claim for damages could successfully be made against him.

The Safeguard of Habitual Reticence.

Where there is no apparent reason for secrecy, medical practitioners are apt to fall into the habit of giving information freely to relatives, friends, and employers about their patients' ailments. One serious consequence of such a habit is that when secrecy is obviously imperative the unwonted refusal of information may do the patient as much harm as the giving of it, by causing surmises as to the reason for unusual secrecy. There are many cases in which a doctor is placed in an awkward position, requiring considerable tact on his part if he is to avoid personal discredit or loss. A mistress asks the family doctor to see a servant-girl who is indisposed, and she expects to be told what the doctor thinks is the nature of the ailment. Should it happen that a disclosure of the diagnosis made would probably lead to the servant's dismissal, it would obviously be wrong to report the diagnosis to the mistress without the patient's consent, and silence, or refusal to give information, may be damaging both to the patient and the doctor. If strict secrecy had always been the rule of the medical attendant his position will be much less difficult, and he will simply refer the mistress to the patient to whom he has already given his opinion. Where the mistress ought to be informed of the patient's condition, the subject should be discussed with the patient, who should be advised to do what is right under the circumstances. Information should in no case be given to the mistress, or anyone else, without the patient's free consent, and care should be taken that proof of such consent is available, if it is acted on. In the case of lunatics, or children, information such as is needed for the proper care of a patient should be given to the persons in charge.

Professional Secrets in the Witness-Box.

It is to be regretted that the law in this country does not forbid a medical attendant to betray professional secrets in the witness-box. It is not sufficient that he should be at liberty to refuse to do so if he chooses, because if it were optional the refusal to give evidence might be regarded as implying that there was something which the patient wished to conceal, and it might consequently be prejudicial. In the present state of the law a medical man cannot be expected to expose himself to possible penalties by refusing to give evidence in violation of professional confidence when directed to do so by a judge, but the better part of the medical profession would support and approve of such refusal in suitable cases; and, if a firm stand were taken by the medical profession in the matter, it is unlikely that any prolonged conflict would be required to establish in the law courts a recognition of the duty of medical secrecy. It must, however, be remembered that it is the patients, and not their medical advisers, who would derive advantage from the prevention of the revelation of medical secrets in the witness-box. To patients suffering from venereal and other diseases it may be ruinous if their condition is made public to the world by the simple process of extracting information on the subject from their medical advisers in the witness-box. The dread of such a disaster undoubtedly affords an opportunity for blackmailing without resorting to any criminal procedure. The unwilling medical witness is a common feature of divorce proceedings, since his evidence, in addition to supporting the petition for divorce, will often do irreparable injury to the reputation of his patient. Doctors naturally dislike being used for such purposes, but it seems strange that the public allow themselves to be constantly victimised in this way when they have full power to put a stop to it. A medical man is much less likely to be subpœnaed as a witness if it is quite unknown to the solicitors concerned what his evidence will be, and it is sometimes his own fault when they are aware of it beforehand.

INCOME-TAX ALLOWANCE FOR MOTOR-CAR REPLACEMENT.

SEVERAL correspondents have asked for help in drawing up income-tax returns so as to obtain the allowance for motor-car replacement. Typical difficulties are the following:—

SIR,—I bought a car in 1921 for £365. It was a Crew Ford underslung Ford with an English body, the first car I had owned. A year later I sold this car for £95, and purchased a Morris Cowley for £314. I have now sold this Morris Cowley for £150 and am buying a Humber 11·4 h.p. for £460. I have never claimed income-tax allowance on the purchase of the Morris Cowley, although the Inspector of Taxes has consented to repay the difference between the £95 and £314, considering it as a replacement. But he quibbles over allowing income-tax reduction on the difference between the purchase price of the new Humber (£460) and the selling price of the Morris Cowley (£150) on the grounds of the increased capital outlay. In other words, he does not consider substituting a Morris Cowley by a Humber a "replacement," particularly as the present market price of the Morris Cowley is £198. I would be glad if you would let me know my position in this matter.

SIR,—I bought a second-hand Standard car 9·5 h.p. in August, 1921, for £337 10*s.*, and sold it in April, 1923, for £115. On the latter date I bought a new 12 h.p. Austin car for £460. To what relief of income-tax am I entitled ?

Where a motor-car is used for professional purposes, as was pointed out in a recent article,[1] a curious anomaly exists. The right to claim wear and tear is confined to traders and manufacturers, so that whilst a business man is allowed a deduction for depreciation of the car employed in his business, a doctor, whose practice equally necessitates the use of a car, cannot claim the same deduction. On the other hand, a claim may be put in for the renewal of a car, but only to the extent of the value replaced, less the amount received on sale or exchange. The question which now arises is: What is the replacement value which may be claimed ? Is it the original cost *or* the renewal cost, less amount received on sale ? The Royal Commission considered that the allowance for renewals should be calculated by reference to the cost price of the machinery replaced, thus putting it in the same position as the allowance for depreciation. But this proposal is regarded as the basis of legislation, while the actual practice at present is to give renewals strictly on the basis of the cost of such renewals. Applying these principles to the concrete case stated by our first correspondent, the allowance is calculated as follows, assuming that the new cars were similar to those sold :—

1922.—New car (Morris Cowley)	£314
Less sale Crew Ford	95
Allowance	£219
1924.—New car (Humber)	£460
Less sale Morris Cowley	150
Allowance	£310

If, as appears probable, the Humber was of superior type and value to the car displaced, the increased value would be disallowed as being an addition or improvement and not merely maintenance of the previous value. The same principles apply in other cases.

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[1] THE LANCET, Jan. 12th, 1924, p. 81.

THE LANCET.

LONDON: SATURDAY, APRIL 26, 1924.

THE CURSE OF THE TROPICS.

IT is probable that there are few folk in this country who have not, at some time or other, felt the fascination of the tropics. Countless British boys have experienced it during the breathless perusal of tales of adventure, for those vast regions which stretch between Cancer and Capricorn have for long been realms of high romance. To those who love the study of Nature and who delight in superb scenery the call of the tropics is insistent, for where is Nature so bountiful, and where can more varied majestic and beautiful landscapes be found than within what is often called, not perhaps too correctly, the torrid zone? To the merchant adventurer the tropics have ever appealed as a rich field for exploitation, as a veritable El Dorado, and indeed much of the actual and potential wealth of the world lies in those lands of the sun. The sportsman looks upon many a tract of the tropics as a paradise; the missionary is lured to hot climates by his or her craving for change and adventure, coupled with a desire to carry a gospel message to benighted heathen; the invalid, fleeing from the rigours of a British winter, seeks either the sub-tropics or the tropics themselves, and revels in bright sunshine and an immunity from icy blasts and showers of sleet and snow. In the tropics the soldier and the sailor see service under guises new and strange but withal attractive—at least for a time, while the merchant seaman comes and goes in our argosies of commerce, linking the far-flung, tropical possessions of the Empire with the Homeland and with each other. Such is one aspect of the tropics and of tropical life. Another is to be found in the need of this country for the produce of those territories which have been explored and exploited by her sons throughout the centuries, many of which they have tamed and reclaimed, most of which they have benefited, and in all of which they have left their bones. The enormous importance of the tropical dependencies of Great Britain from the commercial standpoint will be manifest at the Empire Exhibition, and there also something will be seen of their inhabitants, of their scenery, of their history. The exhibit will form a token of their loyalty to the Mother Country, of their dependence upon her and her dependence upon them.

But there is yet another aspect, not the least important and, in some ways, the most interesting, which happily receives attention and which will surely attract attention within the precincts of Wembley. Housed in the British Government Building there is a Tropical Health Section, the chief features of which are described elsewhere. No one who visits this graphic display of tropical medicine and hygiene can fail to be impressed by it; but few, it is to be feared, will realise to the full what it signifies and what tragedy and romance lie behind it all. There is manifested the tragedy of millions of lives lost for lack of knowledge, of naval and military expeditions wrecked, of vast treasures wasted, of notable and promising enterprises abandoned. There is a tragic burden of inefficiency, sorrow, misery, and despair, tales of which are scattered through many books, and which has left its mark, not solely in the form of graves, throughout the length and breadth of the tropical world. There is much of tragedy in the shape of lost opportunities, in the strangling hold of vested interests, in the stupidity, folly, and pig-headedness, aye, and wickedness, of those who opposed progress, who were deaf to the claims of science, who did their best to set back the clock. On the other hand, there is an element of romance in the strivings of devoted men to solve the mysteries of tropical disease, in the astonishing results they achieved, in the marvels they revealed, in the many contests they had to wage with doubters and traducers. Again, there is abundance of romance in the application of the knowledge gained and the transformation effected by such application, in the war waged, not only against disease and death, but with human pride and ignorance, prejudice and selfishness. Altogether tropical medicine is an amazing business, and most of it has been crowded into the last 30 years. But it would be a mistake to view the exhibits at Wembley merely in the light of an historical pageant. The burden of which we have spoken still exists, doubtless infinitely lighter than of yore, but for all that pressing heavily on many of our tropical possessions. Blessed in many respects the tropics have their disabilities. From the European standpoint the climate is trying, exhausting, sometimes almost unbearable, there is often an acute sense of isolation; the surroundings are frequently irritating, monotony may make for melancholy, the molehill with marvellous celerity becomes the mountain. Yet, excepting possibly climate in some of its aspects, all these trials and troubles sink into insignificance compared with the presence of disease. Disease is the true curse of the tropics: it militates against their conquest by man and has in the past defeated him time and again. In the old records it is strange to read how men groped in darkness, attributing tropical maladies, as, for example, malaria and yellow fever, to all kinds of causes—miasmata from marshes, effluvia from decomposing material, atmospheric disturbances, and even to celestial displays like comets. It is, moreover, pitiful to note how, when someone more enterprising or enlightened than his fellows, a SUSRUTU, a RUSH, a NOTT, a BLAIR, a BEAUPERTHUY, a FINLAY, or a KING, advanced a theory which we now know approached the truth, little or no notice was taken of his hypothesis, and when it was not actually ridiculed it was soon relegated to the limbo of forgotten things.

These men were in advance of their times, and it was not until new conceptions on protozoology and entomology had been evolved, and the microscope and the laboratory had begun to take a serious part in the fray, that any real progress was forthcoming. Once, however, LAVERAN and MANSON had led the way, the path in respect of malaria was open for ROSS to commence his brilliant and unforgettable researches; open in one sense, but beset with difficulties and obstacles in another, for he, like others before and after him, was the victim of official stupidity and neglect. The Italians played their great part, and the mystery of malaria transmission was solved. As a direct result the Americans grappled with the problem of yellow fever, and with the loss of some valuable lives wrested the secret which "Yellow Jack" had for so long managed to conceal. But the Americans went farther. They realised and appreciated the great opportunity vouchsafed to them, and, fired by that idealism which so often spells success, they set out to obliterate the disease altogether.

What is more, they have well-nigh succeeded, and the burden of yellow fever has been almost lifted from the New World. Yet on the African West Coast the disease still lingers and flares out at intervals, while apathy and a false economy tolerate the presence of its mosquito vector. At the same time it may be admitted that the problem on the eastern side of the Atlantic is in some respects different to that upon the western, so that an equitable comparison cannot easily be drawn. Meanwhile malaria still remains the second or third great killing disease of the world, dysentery slays outright or makes miserable wrecks of men and women, cholera sweeps away the unwary, plague claims its victims in thousands and hampers commerce, ankylostomiasis saps the energy of native labour, leprosy makes pariahs and outcasts of hapless sufferers, and sleeping sickness, far from asleep, takes toll of the African negro. Yet in every instance we know the why and the wherefore of these maladies, and to a very large extent could and should extend our mastery over them. In many cases a great deal has been accomplished—how much no one can say who has not made a study of the past with its truly appalling records, who has not read of veritable armies of men disappearing as the result of epidemics, of thousands of young and promising lives cut short on the threshold of the tropics, of the crippled beings, a mere remnant of those who had sallied forth, returning from India and elsewhere with ruined constitutions, a burden to themselves and to their country. The wonder is that any survived, and that acquired immunity can be such a potent force as it has proved itself to be. It would, however, be a bad business if we had still to rely upon acquired immunity; and, though it will continue to play its part, its beneficent action must be reinforced by measures based on a sound knowledge of tropical pathology. In certain directions there is good cause for especial satisfaction. New light has been thrown upon plague by Norman White; leprosy, thanks to Sir Leonard Rogers, is to be attacked upon a scale never hitherto attempted, the parasites of ankylostomiasis and sleeping sickness are being countered by new and surprisingly effective remedies, leishmaniasis is controlled by tartar emetic, yaws has been conquered by the organic arsenicals and bismuth, and schistosomiasis has yielded to antimony and emetine.

So far so good, but in other directions the outlook is somewhat depressing. Malaria in many places still defies us, largely because we do not take it seriously and spend enough upon its suppression; dysentery in its chronic form remains an enigma as far as treatment goes; the epidemiology of cholera eludes us, while in many hygienic directions our tropical possessions lag behind the times and pay a corresponding penalty. Let us then welcome the Tropical Health Section at Wembley. It should excite interest and create enthusiasm. Not only does it furnish information regarding the cause, nature, and treatment of many tropical diseases, but it shows, by models and otherwise, how we have learned to safeguard the public health in those lands beyond the sea. In this all-important and humanitarian work men of our race and lineage have played a notable and a noble part, and it is fitting that in the great display of the Empire's resources there should be emphasised those disease factors which exercise a malign influence upon those resources and their exploitation. We welcome this record—a fascinating record—of what has been accomplished by the combined efforts of the clinician, the laboratory worker, and the hygienist.

RADIOGRAPHY OF THE RIGHT HYPOCHONDRIUM.

Of recent years much attention has been given to the diagnosis of affections of the upper abdomen from data obtained by the use of X rays. Whilst gastric diseases soon yielded to the systematic investigations of the radiographer, many difficulties prevented the development of a technique for demonstrating the presence of affections of the duodenum and gall-bladder. A stage has now been reached when, with a considerable degree of certainty, disease of these organs can be predicted on the results of radiography alone. This has been brought about particularly by the work of Cole, Case, George, and Leonard in America, and of Holland and Knox in this country. These observers concentrated their efforts upon the direct, as opposed to the indirect, signs relied upon almost exclusively by continental workers. Now, however, it is widely conceded that direct evidence is obtainable and extremely valuable. Yet in spite of the demonstration of such possibilities the inherent difficulties of the subject have prevented the rapid communication of the technique to radiographers in general. To take the duodenum first. It is not always possible to visualise this part of the alimentary canal after a barium meal by a simple antero-posterior exposure. The duodenum may be behind the gastric shadow, so that it can only be seen in a lateral or oblique view. The contrast meal remains for but a short time in the first part of the duodenum, from which it is expelled at intervals by a peristaltic contraction rapidly through the rest of this viscus. It thus happens that it is necessary to select the right moment to photograph the duodenal cap, whilst demonstration of the second and third parts is often a matter of chance. The choice of the right position and the appropriate time for the exposure is essential, but once this has been done the shadow of the duodenal bulb can afford much information. Irregular distortion, a niche or incisura may give clear evidence of duodenal ulceration, but two facts must be borne in mind: a duodenal ulcer may be present with no deformity of the cap; irregularities from periduodenitis may depend upon disease, not of the intestine itself, but of the neighbouring gall-bladder. There is considerable liability to error also if a proper filling of the duodenal bulb cannot be induced, for appearances almost exactly simulating those resulting from disease may obtrude themselves. When the barium delays in the second and third parts of the duodenum, the chronic ileus, described in this country by Wilkie as due to compression by the superior mesenteric artery, is nearly always present. Gall-bladder affections afford even greater problems when their demonstration by X rays is essayed. The density of gall-stones is so nearly that of their surroundings that a nicety of adjustment of the penetration of the rays to the case in question is of prime importance. With care in this respect, the use of intensifying screens and rapid exposures, a considerable proportion of gall-stones will throw recognisable shadows. But not only can disease of the gall-bladder be detected in this way; it also frequently gives evidence by altering the contour of the duodenum or stomach or by fixing the upper jejunum or transverse colon. By taking account of both direct and indirect signs in 128 cases, A. W. George and R. D. Leonard were able to arrive at a correct diagnosis of gall-bladder disease in 88·4 per cent., a nearly similar proportion of success being also claimed by Pierre Duval. It is therefore clear that a new era of exactitude in the diagnosis of affections of the gall-bladder and duodenum has arrived, and it only remains for spread of the knowledge to render these methods available to the general surgeon. For though these researches have now been proceeding for some years, it must be conceded that in the case of gall-bladder disease, at any rate, the assistance afforded by radiography in this country can only be described as meagre and inexact, except in the hands of a few experts.

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PUBLIC HEALTH SERVICE IN THE UNITED STATES.

To appreciate the differences between the public health services of the United States of America and our own Ministry of Health two considerations have to be borne in mind. The first is that the United States is a comparatively new country with a population about double that of the United Kingdom, occupying an area of nearly 4,000,000 square miles instead of something over 120,000, and confronted with all our diseases and a great many besides. In the second place, the Federal Public Health Service has passed through an evolution very different from that of our Ministry of Health. It began over a century ago as the Marine Hospital Service, to provide treatment for sick and disabled seamen. The problem of protecting the States as a combined whole from the introduction of disease from without and of the protection of one State from another led to the establishment of foreign and inter-State quarantine departments. The experience thus gained by the Service led to its aid being called in by the various States and to the establishment of a research department, which is at present investigating practically every public health problem. That there is no parallel between the system of administration which obtains in Great Britain and that of America was emphasised in a recent Chadwick Lecture by Dr. CHARLES PORTER, who, under the health officers' interchange scheme of the Health Section of the League of Nations, visited the United States to study the public health problems of that country. Dr. PORTER comments on the American practice of centralising power. The President of the United States is the executive; the cabinet is his; he appoints the ministers, who are responsible to him and not to the elected body. He commissions all officers, including the U.S. Public Health Service officers, who are classed as military officers and have ranks corresponding to those in the Army Medical Service—Surgeon-General, and so on—and wear a uniform as and when it appears proper, on port and quarantine work, for example. In each of the individual States there is a chief executive, the Governor, who appoints the chief officers. In cities, in general, the mayor is the chief executive, the chief officers being his. In the health department the chief health officer, usually known as the Commissioner of Health, is the executive and he commonly makes the appointments to the subsidiary positions.

The great work carried out by the Federal Public Health Service is well shown in the report of Surgeon-General H. S. CUMMING for the year 1923.[1] In addition to the divisions for marine hospitals, foreign quarantine, inter-State quarantine, and research, there are divisions for sanitary reports and statistics, for venereal diseases and of personnel and accounts, each of the seven divisions being administered by an assistant surgeon-general. At the beginning of the year, the report states, there were about 200 commissioned medical officers on the regular corps, graded as senior surgeons, passed assistant surgeons, and assistant surgeons, in addition to nearly 1000 reserve commissioned officers on active duty. The total medical, scientific, and general staff at the end of the year numbered 9420. Members of this staff are loaned out on application to the various States and counties for conducting intensive sanitary surveys, for investigating various disease problems, for instituting local public health services in primitive regions at present lacking in such organisations, for setting in motion schemes of school medical inspection, and so on. All this pioneer work is largely helped by Federal grants-in-aid and by funds supplied by the International Health Board, formerly the Rockefeller Commission. General CUMMING reports that health conditions generally were as satisfactory as in recent years. Two charts show the wonderful decline in the mortality from typhoid fever and the steady improvement in the tuberculosis mortality since 1900 in the original registration States. The improvement in tuberculosis was interrupted in 1917 and 1918; these were also the worst years of the retrogression which occurred in England and Wales during the war. The venereal diseases division records that the occurrence of new cases was noticeably less in the year under review. A sharp outbreak of yellow fever in Colombia and the evidence of a high mosquito index in certain seaports in tropical America made it necessary to impose more stringent quarantine restrictions. On the other hand, the recognition of the Government of Mexico has been followed by improved sanitary conditions in Mexican ports and it has been made possible to remove some of the more stringent restrictions. As there has been no epidemic of yellow fever in the U.S.A. since 1905, there is now a very small percentage of immune persons in the Southern States. The Mexican border country is badly infested with the stegomyia mosquito, and a rigid watch has to be kept by the quarantine division along the land frontier to prevent clandestine crossing and the introduction not only of yellow fever, but also of small-pox and typhus. Human and rodent plague appear to have been eliminated, but the infection still remains in ground squirrels in California. General CUMMING emphasises the value of the medical officers of the service stationed in European, Asiatic, and Spanish-American ports, not only for the protection of the U.S.A., but for the prevention of delays to shipping when America is reached. Such officers will form the nucleus of the organisation required when Congress passes the much-needed laws providing for the examination of immigrants before embarkation for America.

Rural sanitation has been carefully investigated and the results show that the fundamental need throughout the rural districts of the United States is the establishment of efficient local whole-time service of public health officials. Valuable anti-malarial investigations have been made as to the Paris-green method for the control of mosquito breeding in ponds and the creosote method for repelling mosquitoes from dwellings. Some idea of the larger activities of the division of scientific research may be gleaned from the following list of subjects, to each one of which an expert and a group of trained workers has been assigned: child hygiene, industrial hygiene, stream pollution, epidemiology and statistics, malaria and sewage disposal. Among the individual diseases studied have been cancer, clonorchiasis, diphtheria, dengue fever, Malta fever, pellagra, tuberculosis, typhoid fever, yellow fever, leprosy, Rocky Mountain spotted fever, and food poisoning; and among other topics mental hygiene, milk and public health administration. The functions of the U.S.A. Public Health Service are advisory and consultative rather than supervisory in relation to the various States, and the aim is to stimulate public health activity and to coöperate with the various State, county, and urban health services. It must, we fear, be admitted that the interests of public health hold a higher place in the minds of the people, or at any rate are more enthusiastically advanced, across the Atlantic than they are in this country. As an instance of this we might quote Dr. PORTER's remarks on milk control. Milk control, he stated, was left almost entirely to individual States, and there was little doubt that, owing mainly to a determination on the part of both local authorities and consumers to have a pure and clean milk-supply, and to coöperation by all parties, including producers, railroad and distributing companies, the conditions in the States were better than in this country, and the American consumer got a safer article. Factors contributing to this achievement were: propaganda, the driving of milk production into the hands of the farmer who was exclusively a dairy farmer, pasteurisation (about 98 per cent. of the milk sold in most cities is so treated), and bottling. Decrease amongst American children in tuberculosis of the bones and glands may be attributed largely to this improvement in the milk-supply. Public health workers in whatever sphere may draw instruction and stimulus from General Cumming's report.

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[1] Annual Report of the Surgeon-General of the Public Health Service of the United States for the Fiscal Year, 1923. Washington: Government Printing Office. 75 cents.

Annotations.

"Ne quid nimis."

FOREIGN BODIES IN THE BRONCHI.

We publish with this issue the third Lumleian Lecture by Dr. Thomas McCrae, of Philadelphia, professor of medicine at the Jefferson College, Philadelphia. Prof. McCrae has chosen for his lectures a unique subject, and in doing so he has grasped a unique opportunity. Nowhere else in the world has been collected such a series of cases of foreign bodies in the bronchi, and it is to the genius of Chevalier Jackson that the Jefferson College owes this proud distinction and a large group of patients their relief. More than 1300 cases have presented themselves with this dangerous and most distressing condition, often after other surgeons had attempted and failed to give them relief. Jackson has never once failed to remove the foreign body, usually in a few seconds and always by the bronchoscope. Probably only those who have seen Jackson at work can appreciate his uncanny skill, but all those who have read his book will realise the debt owed to him by humanity and by surgeons all over the world. They will appreciate at their true value the laborious care upon which such skill has been founded, and the generosity which has revealed to others the steps by which it was built up. Some of them, gifted with unusual common sense, will pay the highest possible compliment to the author by following his methods and emulating his skill. With admirable breadth of outlook Prof. McCrae has given to these cases a far wider meaning than that of a mere mechanical accident. The impaction of foreign bodies in the bronchi is rapidly followed by a series of profound pathological changes in the lungs, and from these pathological changes and their clinical manifestations lessons have been drawn of deep significance for both the physician and the surgeon. The lectures should be studied with care by all who are interested in lung conditions. They arouse an uneasy feeling that some of the cases which have baffled all our efforts at diagnosis and resisted all attempts at cure may perhaps be due not to chance infections but to the inspiration of gross foreign bodies. They open up a definite line of progress demanding the close coöperation of medical and surgical skill.

EPIDEMIC GANGRENE OF THE VULVA.

Dr. W. K. Stephansky[1] describes an epidemic of gangrene of the external genitals in little girls which occurred in a hospital at Odessa from December, 1922, to June, 1923. The disease had an acute onset and course accompanied with a high temperature. The morbid process usually started on the labia majora, less frequently in the neighbourhood of the anus or skin of the perineum. The first signs were redness, œdema, and pain in the labia, and in a few days small ulcers developed, which rapidly increased in size, involving the labia minora, clitoris, vestibulum, vaginal mucous membrane, perineum, and lower part of the rectal mucous membrane. In another three or four days moist gangrene set in. Aggravation of the general condition then ensued, and death took place in two to seven days with symptoms of septicæmia and toxæmia. The lesions were usually, but not always, symmetrical. The mortality was high. Of nine cases specially studied by Dr. Stephansky seven died. The disease generally occurred during or after measles, scarlet fever, or whooping-cough, but in one case the child had had no previous disease. All the children at the time of the attack were in a satisfactory general condition and well nourished. The following considerations show that there are no grounds for regarding the condition as identical with cancrum oris. In the first place, cancrum oris does not occur in previously healthy children, but only in those that are debilitated. Secondly, the onset is slow and insidious and all acute inflammatory phenomena, including high temperature such as were present in this outbreak, are absent. Thirdly, cancrum oris is almost always unilateral. Fourthly, in Dr. Stephansky's cases, the gangrene was superficial and destroyed only the skin and subcutaneous tissue, whereas cancrum oris extended not only superficially but deeply. No complete bacteriological examination was made, but smears of the necrotic areas showed fusiform bacilli and spirilla in all the cases. Diphtheria bacilli, which are frequently present in cancrum oris, were not found. Cultures of the blood on agar and broth, which were made in one case, proved sterile. Dr. Stephansky concludes that the condition described by him is not identical with cancrum oris, but is rather an acute epidemic disease sui generis, and possibly a new nosological entity.

TRANSIENT OPACITIES IN THE LENS.

Is it possible for slight opacities in the crystalline lens ever to disappear? Do they always tend to progress to the formation of a cataract requiring operation? To the latter of these questions every experienced ophthalmic surgeon will answer in the negative. To the former the answer will be by no means so unanimous. Many will tell us that as a matter of experience early lens opacities have disappeared, and some will cite cases in which, whether or not as the result of some special treatment, not only have the opacities disappeared, but sight has been materially improved. The article which we published on April 5th by Mr. Inglis Taylor is a remarkable case in point. He claims to have improved the vision in one or both eyes of some six or seven patients with cortical cataract, from 6/24 or worse to nearly, or quite, normal in the course of a few months' treatment by the external application to the eye of an ointment composed of a compound of calcium and iodine. This treatment is recommended by the French ophthalmologist Dor, and is based on the assumption that cataract is due to a hydration of the lens caused by the action of hydrating ferments in the blood. Whether this is true in all cases must be doubtful, but that the idea is fruitful and that the treatment has been efficacious in some cases seems to be proved by the details of Mr. Taylor's cases. The matter is one of great importance in which we need much further knowledge, both on the pathological and on the clinical side.

VARIATIONS IN THE SENSIBILITY TO PRESSURE PAIN.

By stimulating the median nerve with faradic currents through electrodes—one placed about four inches above the wrist and the other at the wrist, and applying increasing pressure on the thenar eminence by the application of weights 6–8–10 kg.—the pressure pain threshold being determined by an æsthesiometer, R. C. Shawe[1] finds that weak faradic stimulation of the median nerve, which caused a tingling sensation only, causes a marked lowering of the threshold of both cutaneous and deep receptors. This is accompanied by cutaneous flushing in the area of the hand supplied by the median, being especially noticeable in the index finger and thenar eminence. Very strong faradic stimulation, which could only be borne for a moment or two and evoked vigorous muscular contractions, raises the threshold in both cutaneous and deep receptors. It is accompanied by marked vaso-constriction in the palmar distribution of the median. The cutaneous receptors were excluded when necessary by freezing the skin with ethyl chloride. Faradic stimulation of the median nerve of a degree intermediate to the above caused a lowering of the threshold in the cutaneous receptors only. The changes were found to occur even if the circulation had been excluded for five to eight minutes, and therefore vascular change cannot be held to explain the sensory variation. Nor can changes in conductivity in the nerve fibres be held responsible for these results, because although strong currents may decrease conductivity, weak currents are not known to increase it. Observations on the contralateral side to that stimulated showed that during weak nerve stimulation there was a corresponding lowering of the threshold in the median and ulnar areas, which in some cases was associated with a flushing in the thenar region of the side stimulated and the opposite side. During very strong faradic stimulation the threshold was raised in both ulnar and median areas of the opposite side to that stimulated. The author concludes that the variations in the threshold of pressure pain caused by nerve stimulation are due principally to changes in the nerve cells with which the afferent fibres are connected.

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[1] Deutsche medizinische Wochenschrift, March 7th, 1924.

[1] Journal of Physiology, vol. lviii., March, 1924.

THE MEANING OF FEVER.

LONG before the introduction of the clinical thermometer the meaning of fever was one of the most intriguing problems exercising the mind of the physician, and even when it became possible to measure degrees of pyrexia with accuracy but little light was thrown upon the matter. For many years a heightened temperature was regarded as evil in itself—very much as a heightened blood pressure quite usually is now—and in the treatment of febrile conditions the main line of attack was directed towards its reduction. Experience of antipyretic drugs led to some doubts as to the actual benefit to be expected from a mere lowering of temperature, and the pioneer experimental work of Rolly and Meltzer[1] showed that in infectious conditions some degree of pyrexia was certainly beneficial; the animals which they kept at fever heat were able to withstand infections fatal to normal controls. The light-hearted exhibition of antipyretics does not now hold a place in therapeusis, nor is the degree of fever looked upon to any great extent as an index to the gravity of the condition; none the less the why and wherefore of fever remains almost as much a mystery as ever.

Some little light has been thrown upon at least one aspect of the subject by Dr. Oliver Heath[2] in two communications recently made to the Royal Society of Medicine. Working partly upon himself with typhoid vaccines and partly upon typhoid patients, Dr. Heath has been able to obtain results indicating in a very clear and unequivocal manner that the course of fever runs parallel to the reduction below normal of antibody in the blood. Thus, on administering subcutaneously to himself 2000 million killed typhoid bacilli, he found that a rise of temperature to 100° F. was synchronous with a very considerable drop in the bactericidal power of his blood; the return of the temperature to normal on the day following the injection was associated with a restoration of the normal bactericidal power. Inoculation of doses of dead typhoid bacilli on ten successive days likewise produced irregular pyrexia, associated when the dose was sufficiently large with a demonstrable fall in the bactericidal titre of the serum; as in clinical typhoid fever there was no marked rise above the previous level of either the bactericidal or agglutinating power of the serum until about the tenth day. Dr. Heath suggests that an intensification of the experiment, by increasing the size and frequency of the doses, would have resulted in a continuous supernormal temperature and subnormal antibody titre, a condition which he believes to hold during the early days of a typhoid infection.

Numerous other observations are recorded, all going to show that fever is always associated with a reduction below normal of antibody in the blood. This, in itself, is a valuable observation. Dr. Heath interprets his evidence to mean that this reduction of circulating antibody is the actual cause of fever, and that the heightened temperature may be looked upon as in the nature of a systemic reflex designed to speed up the production of more antibody to replace that used up. The teleological attitude in pathology is beset with pitfalls, but on the evidence Dr. Heath seems justified when he recommends that the use of antipyretic drugs for the cure of fever should be discontinued.

PERISTALSIS AND MENTAL DISORDER.

IN the current issue of the *British Journal of Radiology* appears a short record by Drs. R. V. Stanford, Edwin Goodall, and Robert Knox of barium meal findings in 24 cases of mental disorder. The majority were recent cases and of a depressed type. As in a previous series published by these authors, the common findings were ptosis of the transverse colon, spastic contraction of the large bowel, and general stasis in the lower part of the intestinal tract. It is disappointing to find that the authors do not themselves comment on or analyse their results. Are these conditions of the intestinal tract to be regarded as a factor in the causation of insanity, or are they merely symptomatic? This appears to be a difficulty which would still have to be faced, even were a really characteristic abnormality demonstrable in every case of a certain type of insanity. For example, it might be asked: Is the patient melancholic because he is constipated, or is he constipated because he has melancholia? In a future communication from Cardiff Mental Hospital some answer to this question will be welcome. To return to the particular radiological findings, the abnormalities noted cannot be called characteristic; anyone familiar with X ray reports knows that ptosis and stasis are unhappily common in subjects whose sanity has never been in question.

ARTIFICIAL PNEUMOTHORAX STATISTICS.

IT is doubtful if the combined statistical evidence of many workers is as valuable as that of a single worker or institution, even if the figures of the latter are comparatively small. But on behalf of pooled statistics it may be claimed that individual lack of judgment and excess of enthusiasm are less likely to obscure the issue than when we have to depend on one worker for all our information. The problem is much the same as that of choosing a milk-supply from one cow or a large herd; if the one cow be diseased, it would be better for the consumer if he drew his milk-supply from a large herd with only one or two diseased cattle. A good sample of the large herd, or pooled statistics, is to be found in a paper by Dr. H. Maendl, of Grimmenstein,[1] who has collected the experiences of his fellow workers in much the same way that Dr. L. S. T. Burrell and Dr. A. S. MacNalty collected, under the auspices of the Medical Research Council, the work done in this country on artificial pneumothorax. Dr. Maendl addressed a questionnaire to 180 specialists and hospitals in Germany, Austria, Czecho-Slovakia, and Switzerland, and he obtained answers and statistically suitable information from 29 doctors. He was thus able to add more than 1000 cases to his own not inconsiderable material of 300 cases, and of the total thus obtained there were 1330 cases in which the treatment had been completed, the pneumothorax having been started 2 to 12 years earlier. With regard to the permanent successes achieved, there were 784 cases in which information on this point was obtained, and among them there were 524, or 66 per cent., in which the improvement effected had been lasting. It was so in 49 per cent. of 172 of Dr. Maendl's own cases. With regard to the significance of a pleural effusion complicating an artificial pneumothorax, he shares with Muralt and Koeniger the opinion that such an effusion may be a sign of good prognosis. Of 70 patients who were still alive from 2 to 12 years after the induction of a pneumothorax, 38, or 54 per cent., had developed a pleural effusion, whereas of 76 patients who had died only 28, or 37 per cent., had developed such an effusion while the pneumothorax still existed. Of 15 patients who had achieved clinical recovery, maintained for 2 to 10 years, as many as 11, or 73 per cent., had developed a pleural effusion. If a pleural effusion is really as beneficial as these statistics suggest, it would be natural to provoke such effusions artificially—and nothing would be easier with the help of a little tincture of iodine or other irritant—in the course of lung collapse treatment. But the case for such a procedure would have to be made out much more convincingly than it has been at present. It is satisfactory to note that there were only 15 cases of gas embolism, none of which terminated fatally, among the cases collected by Dr. Maendl.

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[1] Rolly and Meltzer: Deutsch. Arch. f. Klin. Med., 1908, xciv., 335.

[2] Heath, Oliver: The Meaning of Fever, illustrated from Typhoid, Proc. Roy. Soc. Med. (S. Path.), 1924, xvii., 1–11. The Clinical Interpretation of Fever. A paper read to the Medical Section of the Royal Society of Medicine on March 25th, 1924.

[1] Beiträge zur Klinik der Tuberkulose, 1924, lviii., 29.

MEDICAL PRACTICE BY FOREIGNERS IN BERLIN.

THE financial circumstances of medical practitioners within the German Republic are not at present so happy that free competition by foreigners is regarded with equanimity. As it stands, German law does not prevent foreign medical men from settling in Germany nor prohibit them from practising there; but the stipulation is made that they should not use any title identical with that of a duly registered practitioner or closely resembling it. Before the war the actual number of foreign practitioners in Germany not possessing German qualifications was insignificant, the foreign colonies in the country being of modest size and apt to consult the German practitioner. This condition was totally changed after the Russian revolution, when Germany—and Berlin in particular—was overcrowded with Russians who preferred to live outside their national jurisdiction. In certain quarters of Berlin at the present time more Russian than German may be heard spoken, and Russian shops, theatres, libraries, restaurants, and journals have sprung up in large numbers. It is stated that about 100 Russian medical men have settled in Berlin and practise among the large Russian colony there. A recent letter addressed to the *Berliner Aerzteblatt*, the official organ of the Berlin Medical Chamber, called attention to the fact that several Russian medical men in Berlin had private clinics of their own and were operating there with the assistance of registered German medical men. The writer suggested that Russian doctors were obtaining permission from the authorities to reside in Berlin on the plea of being political refugees. The Chamber, having approached the Government, was informed that no special residential facilities had been granted to foreign medical men, but that in several cases German doctors had let off part of their flats to Russian medical men as consulting-rooms. Further investigation was promised. In the meantime the Berlin medical profession is losing a great part of its pre-war income owing to the nearly total loss of Russian patients. Before the war these patients, flocking home from the western spas and health resorts, were wont to sojourn in Berlin to consult specialists there, whereas now they are permanently settled, they prefer to consult their own countrymen. The position is one which demands sympathetic handling.

INQUIRY INTO NITROUS OXIDE GAS.

IN view of the need for more accurate knowledge of the modes of action of various anæsthetic agents and of the impurities that may be associated with them, the Medical Research Council and the Anæsthetics Section of the Royal Society of Medicine have appointed an Anæsthetics Committee to initiate and direct investigations. The following have already undertaken to serve in this way: Dr. J. Blomfield (chairman), Dr. H. H. Dale, F.R.S., Prof. F. G. Donnan, F.R.S., Dr. C. F. Hadfield (secretary), Prof. M. S. Pembrey, F.R.S., Dr. F. E. Shipway. Among other subjects of study an immediate investigation is to be made into the nature and frequency of impurities that may occur in nitrous oxide gas. Nitrous oxide is now used for operations of considerable duration, so that impurities likely to have small effect during brief inhalation might be seriously toxic after prolonged use. At present there is no generally recognised standard of purity for nitrous oxide; it is not included in the British Pharmacopœia and is not subject to official tests. The nitrous oxide manufactured by the various British firms that supply it is of the highest quality, but from time to time reports of somewhat indefinite nature appear to show that toxic effects have been caused by the administration of what is generally briefly known as "gas." The suggestion that this toxicity may be due to some impurity in the nitrous oxide calls for examination, and the Committee are seeking any relevant information. It is requested that anæsthetists who can supply evidence of this kind in detail, and if possible the cylinder to which it relates containing any remaining gas, will communicate with the hon. secretary of the committee, Dr. Charles F. Hadfield, 47, Queen Anne-street, W. 1.

CARCINOMA IN A DIVERTICULUM OF THE BLADDER.

AT a recent meeting of the Brooklyn Urological Society, Dr. Augustus Harris, who reported an illustrative case,[1] remarked that the occurrence of carcinoma in a diverticulum of the bladder was extremely rare. Apart from about six cases in which the condition was not discovered until the autopsy, he had been unable to find a record of a single case. His own patient was a man aged 63, who had had gonorrhœa 25 years previously, and at the age of 62 had had an attack of hæmaturia for a few days, accompanied by retention for one day. Nine months later he began to suffer from intermittent hæmaturia, slowness in starting the act, and increased frequency of micturition. There was no pain, dribbling, or nocturia. He was rather pale and had lost weight. Vesical malignancy was suspected, and examination showed the presence of a dense filiform stricture in the bulbous urethra. There were 5 oz. of residual urine. The stricture was gradually dilated until, after eight weeks' time, full-sized sounds could be passed. Cystoscopy then showed a considerably inflamed and trabeculated bladder, and 1½ inches above the right ureteric orifice the puckered opening of a diverticulum. The bladder was injected with sodium bromide solution and a cystogram taken, which revealed a large sac with a capacity about half that of the bladder. On opening the bladder the tumour was found to be inoperable, and cystostomy was performed. Death took place seven months after the operation. There was no autopsy. After the account of this case had been written an article appeared in the January number of *Surgery, Gynecology, and Obstetrics* by Judd and Scholl, who, in a series of 133 cases of diverticulum of the bladder, reported four with carcinoma, all of which were diagnosed cystoscopically by the appearance of part of the growth at the orifice of the sac. In three the tumour and sac were resected completely, while in the fourth radium was employed. Three died shortly after the operation, and one lived for two years. In six other cases carcinoma of the bladder was associated with a diverticulum.

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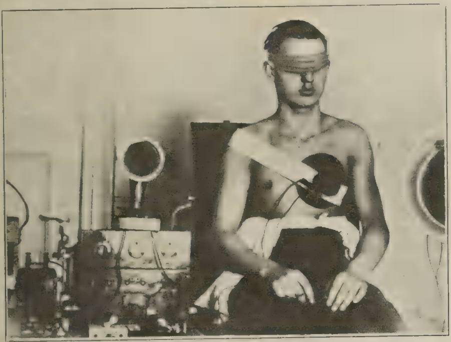
[1] Urological and Cutaneous Review, March, 1924.

BROADCASTING HEART SOUNDS.

AT a meeting of the Bristol Medico-Chirurgical Society held on April 9th a paper was read by Dr. Carey F. Coombs and Dr. C. K. Herapath on auricular failure. This was followed by a discussion, and during the evening an experiment in "broadcasting" heart sounds was made, which if not new to this country, was at least sufficiently unusual to be of more than local interest. The experiment was carried out by Mr. Arthur Mitchell, of Clifton, who was introduced to the meeting by Prof. F. H. Edgeworth. The apparatus used was a sensitive microphone applied over the heart of a person in an adjoining room, and connected to a suitable transformer. This was then amplified by four wireless valves and reproduced through a loud speaker to the audience at the meeting. The first case was that of a normal heart, and the second, one with total arrhythmia. In both instances sounds corresponding to heart beats could be heard clearly all over the room, the irregularity in the second case being strikingly demonstrated. The improvement and perfection of such a method as this offers infinite possibilities for teaching in the future. The accompanying illustration, for which we are indebted to the Sport and General Press Agency, was taken at the clinic of Dr. Leo Jacobsohn, of Charlottenburg, who has also succeeded in amplifying the beats of the human heart so that they are audible in a large hall.



THE NATURE OF "BLOOD" CYSTS.

THE so-called blood cyst of the ovary has long been recognised by gynæcologists the world over; it is usually regarded as being produced by failure to rupture on the part of a Graafian follicle. Probably many such cysts do originate in this way, but recent work by Dr. John A. Sampson,[1] of Albany, N.Y., suggests that many have another and much more interesting mode of development. These cysts attain to their greatest size on the ovary, but Dr. Sampson, in the course of a long series of major gynæcological operations, observed smaller but otherwise similar cysts occurring in various sites upon the pelvic peritoneum. Histological examination showed that both the ovarian blood cysts and those occurring elsewhere possessed an epithelial lining closely resembling the uterine endometrium. Observation of the uterus during operations convinced Dr. Sampson that it was no unusual thing for menstrual blood to regurgitate through the Fallopian tubes into the peritoneal cavity, and actual experiment showed that very little manipulation of the uterus sufficed to bring about the same result after operations upon the endometrium. These observations led Dr. Sampson to believe that blood cysts both of the ovary and elsewhere within the pelvis may arise by implantation of fragments of endometrium escaping through the Fallopian tubes. He was able, moreover, to obtain evidence for belief that what holds for normal holds also for malignant uterine epithelium, and on the strength of this he advises certain obvious modifications, such as a preliminary ligation of the Fallopian tubes, in the performance of hysterectomy for malignant conditions of the uterus. Apart, however, from immediate practical considerations, Dr. Sampson's observations possess a wide general interest. He believes on good evidence that the endometrial implants grow more readily upon the ovary than elsewhere, and that the implants on the pelvic peritoneum are usually secondary to primary ovarian grafts. In the light of the work of Drew[2] on growth-producing substances, recently reported in THE LANCET, this indication of the presence of such a substance in the ovary is of particular interest; the invasiveness of some of these implants, even while clinically benign, gives food for thought. Even more intriguing is the suggestion—it is no more than a suggestion, for the evidence on this point is by no means conclusive—that implants originally benign may undergo malignant change in the presence of such a change in the parent uterine endometrium. Experimental evidence strongly in support of Dr. Sampson's views on the ætiology of the blood cysts has been produced by Dr. Victor C. Jacobson,[3] of the Albany Medical College, working upon rabbits.

THE OPHTHALMIC HOSPITALS OF EGYPT.

THE publication of the usual annual report on the Ophthalmic Hospitals of Egypt for 1922 having been delayed, an abstract of it has been printed privately by Mr. A. F. MacCallan, C.B.E., F.R.C.S., who recently vacated the post of Director of the Ophthalmic Section of the Department of Public Health. Mr. MacCallan held this post for 20 years, during which the organisation of a system of special hospitals proceeded hand in hand with that of a definite school of ophthalmology based on the administrative scheme of the Royal London Ophthalmic Hospital. The 23 existing ophthalmic hospital units situated in the capital towns of the 14 provinces are staffed by Egyptian surgeons, who, after obtaining their diplomas at the Government Medical School, go through a course of instruction at the Giza Hospital and Ophthalmic Laboratory in the suburbs of Cairo, lasting for a minimum period of two years. For some six years all Mr. MacCallan's assistants have been Egyptians, but it must not be forgotten that in the early years the help of other British surgeons was utilised in the initiation of hospital and laboratory courses of instruction. These were Dr. L. S. Miller, of Hobart, Tasmania, Dr. G. H. McLaren, of Montreal, Canada, Dr. E. V. Oulton, of Brighton, Dr. R. G. Waddy, now Professor of Ophthalmology at Sydney, and Dr. J. B. Horgan, of Cork.

The origin of the ophthalmic campaign in Egypt was the liberality of Sir Ernest Cassel in placing under the trusteeship of Lord Cromer, and thereafter under that of the High Commissioner for the time being, a sum of £40,000, the interest of which was to be used for the ophthalmic needs of Egypt. The initial step in carrying out the wishes of the benefactor was taken by obtaining the services of Mr. MacCallan, then working as chief clinical assistant at the Royal London Ophthalmic Hospital, to organise a travelling ophthalmic hospital at which ophthalmic instruction could be given. From this beginning in 1903 has arisen an ophthalmic system consisting of five completely equipped travelling hospitals under canvas, 16 specially designed and built permanent hospitals, and two ophthalmic departments attached to existing general hospitals. Readers of THE LANCET will recall many references to the work of the travelling units. The general administration, the clerical routine, and the clinical work of these hospitals are carried out according to a code of regulations which has the confidence of the staff. As each hospital has two surgeons, a clerk, and a steward, as well as highly skilled hospital attendants, there is an ample staff to cope with the patients; as many as 500 a day attend the out-patient department at certain periods of the year. Each hospital has a number of beds varying from 16 to 30. The higher administration consists of a director, a pathologist, and three inspecting surgeons, former pupils of Mr. MacCallan and appointed by him. There is also a carefully selected and highly efficient clerical staff at headquarters in Cairo, so that there is every reason to believe that the work will continue, provided that the administration remains strong, as well as sympathetic. A large part of the success obtained may be attributed to the fact that the clinical aspect has always been kept in the foreground, and as much of the administration as possible has been delegated to clerical subordinates. That this has not been prejudicial to the work is witnessed by the confidence in it of successive High Commissioners, Ministers, and Under Secretaries, and by its popularity among all classes of Egyptians, even among those who are most opposed to the continuance of any British influence in the country. It is thoroughly recognised by these that they owe an admirable system of cure and prevention of conditions which weigh heavily on their country to a British benefactor primarily, and secondarily to a British surgical administrator. Over £100,000 have been raised for capital expenditure by private donations and by subsidies from county and municipal councils, and the Government grant for maintenance expenses amounts approximately to £50,000 a year. Provision has been made for carrying on ophthalmic clinics at all the provincial primary schools, as well as at several schools in Cairo and Alexandria, where particular attention is paid to the correction of errors of refraction. During the last year Mr. MacCallan was appointed Deputy Director-General in charge of all Medical Services, but he preferred to remain an ophthalmic surgeon, and has returned to practice in London.

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[1] Benign and Malignant Endometrial Implants in the Peritoneal Cavity and their Relation to Certain Ovarian Tumours, by John A. Sampson, M.D., F.A.C.S., Surg., Gyn., and Obst., xxxviii., 3, 287.

[2] On the Cultivation of Tissues and Tumours in Vitro, by A. H. Drew, THE LANCET, 1923, i., 785, 833.

[3] Autotransplantation of Endometrial Tissue in Rabbit, by V. C. Jacobson, Arch. Surg., 1922, v., 281.

FROM various sources information has been received of the recent increase of plague in the Punjab, and the figures in the last Monthly Epidemiological Report, issued by the Health Section of the League of Nations, confirms the bad news. In the figures given by the Director of Public Health for the Punjab, the total of cases was 328 for the week ending March 26th. There were 102 deaths reported from plague in Lahore. Plague cases have been reported throughout the beginning of the year from South-Eastern Russia and the Kirghiz and the Kirghiz Republic, including the Ural and Bukeiev Governments. The disease has been reported from Siberia, and cases have been identified in two European ports—namely the Piræus and Lisbon; but figures from other places, however much they may keep before us the lesson of watchfulness, become negligible when compared with the Indian statistics. In the first completed month of this year there were over 16,000 cases of plague in British India, and 75 per cent. of the cases were fatal. The figures show an ominous rise on those of the corresponding period of last year.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXVIII.—THE TREATMENT OF EARACHE.

OF all the causes of earache the one of outstanding importance both owing to its frequency and to the seriousness of its possible sequelæ is acute otitis media. Every case of earache should be approached as though this were the cause until it is proved not to be. Briefly, the treatment of acute otitis media consists in incision of the drum-head if necessary at the proper moment; the decision as to whether the condition is ripe for this small operation can only be made by examining the ear with the aid of the forehead mirror or the electric otoscope. Those medical men who are unaccustomed to the use of these instruments should refer any case of earache in his practice to some fellow practitioner who has had practice in the examining of drum-heads, or should call in a specialist. It is necessary so to educate opinion in the profession that the application of warm oil or glycerine for earache or the insertion of drops of hydrogen peroxide without examining the drum-head should be deprecated as strongly as, for example, the administration of castor oil to a child with the belly-ache without examining the iliac fossa to exclude appendicitis. A detailed description of the physical signs of the inflamed drum-head and of the treatment of this condition will be found elsewhere,[1] but stress may be laid upon certain important points.

1. *Warmth* best relieves the pain, but it should not be employed in the form of hot fomentations. These cause the skin to become sodden; the skin in the external auditory meatus swells and the epithelium peals off and may block the meatus. In this way the subsequent examination of the drum-head becomes impossible, so that the changes occurring therein cannot be observed. Thus a drum-head may be incised unnecessarily or a case may be allowed to go too far without paracentesis, so that the risk of mastoiditis is greatly increased. The best way to apply warmth is to make the patient lie with the bad ear upon a half-filled rubber hot-water bottle which is covered with flannel. In addition, it is well to cover the head with a flannel cap so that the ear is still protected if the patient roll over in the night.

2. *Removal of Wax.*—To remove wax from the ear of a small child or even of an adult who has pain in that ear is the most difficult operation in otology. If it cannot be done with ease and at once, it is best to make no further attempt but to give the patient an anæsthetic. The ear can then be cleaned up and the drum-head examined under anæsthesia. If this examination gives evidence of an acute otitis media the incision can be made at once. There is but little fear of giving an anæsthetic unnecessarily, for the association of pain in the ear with such tenderness that wax cannot be removed nearly always indicates acute otitis media.

3. *Anæsthetics.*—A few otologists acquire so high a skill that gas only is needed for them to incise the drum-head, but for the practitioner it is better to give an anæsthetic which gives more prolonged unconsciousness. This enables him to clean out the ear, to pick up the landmarks on the drum-head, and carefully to incise the most prominent part. I have not found any local anæsthetic which is efficient for the incision of an inflamed drum-head, though some say that it can be done after the application of Bonain's solution (equal parts of cocaine, menthol, and pure carbolic).

4. *The Adult Patient.*—The treatment is the same in the adult patient, though the pain may not be so severe, and the subacute type, which will resolve

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[1] The Treatment of Acute Otitis Media in Children, British Journal of Children's Diseases, April–June, 1923.

without incision or rupture of the drum-head, may be more common than in the child; but the possible sequelæ either in the form of acute mastoiditis with its complications or in the form of chronic suppuration are just as likely to occur and to lead to as tragic a termination if the condition is neglected.

Inflammation of the Skin of the Meatus.

The examination of the ears, which the practitioner has made in order to exclude otitis media, will also have drawn his attention to the other common aural lesion of earache. This is some inflammation of the skin of the meatus especially in the form of a boil. The treatment depends first upon the decision as to whether the boil should be opened or not. The pain in this condition is so intense that any visible swelling may be incised, even if there is no pus therein, with considerable advantage owing to the relief of tension in the inflamed part. If the boil is pointing it is well to incise without waiting for it to burst; even if it has already burst it should still be incised unless the discharge is very free. In both these conditions the relief of tension will so ease the pain that the patient should not be allowed to go without this benefit. Here, again, I use a general anæsthetic, though it is said to be possible to do the small operation under Bonain's solution. After the boil is opened it should be emptied of pus and the interior touched with pure carbolic acid.

The Toilet of the Outer Ear.—Further treatment of such a case, and the whole treatment of a case which does not need incision, depends upon the toilet of the skin of the outer ear. This cannot be left to the patient, but must be carried out by the practitioner in a good light with a wool-carrier. The best cleansing agent is alcohol in the form of methylated or of rectified spirit or of scent. The whole of the skin of the meatus and of the neighbouring part of the pinna should be gently rubbed in such a way as to bring from the ear the superficial epithelium and any wax or secretion that may be obstructing the orifices of the various glands of the skin of the meatus. The whole area may be painted with tincture of iodine after it is thoroughly cleaned. It is best to repeat this treatment daily for a few days, but if this is impossible the patient may himself apply some ung. hyd. ox. flav. to the skin of the ear. Sometimes it is easier for him to apply this in the form of drops, which may be made by suspending two or three grains of the yellow oxide of mercury in an ounce of equal parts of glycerine and spirit. Here, again, fomentations should be avoided; they tend to make the meatus full of a nasty decomposing mess, and to spread the boils from the ear to the skin of the neighbouring parts. The chronic form of furunculosis is sometimes most intractable and tends to recur whenever the patient is out of sorts.

Pain Referred from the Mouth.

If the ear presents no obvious cause of the symptom the mouth should be examined. Most often a carious molar tooth is at fault, usually the back one, and more frequently the lower than the upper. Any form of acute inflammation in the region of the fauces will cause earache; it is not uncommon in cases of tonsillitis, parenchymatous or follicular, in other forms of acute pharyngitis, and after operations on the tonsils. In all these lesions the inflammation may spread up the Eustachian tubes to the middle ear and an acute otitis media may be the cause of the pain. Therefore, it still behoves the doctor to examine the drum-heads as soon as complaint is made of earache; he must not jump to the conclusion that the pain is referred. One form of subacute pharyngitis is that which attacks the naso-pharynx in adults and affects particularly the band of lymphoid tissue which runs down the lateral wall of the pharynx. The only thing to be seen through the mouth is an infection of the mucous membrane behind the posterior pillar of the fauces on either side. In such a case there may be quite intense earache occurring at the height of the excursion of the structures in the act of swallowing.

Pain or Tenderness Near the Ear.

Certain lesions cause a pain which the patient describes as earache but which proves on critical examination to be pain or tenderness near the ear. The commonest lesion here is an enlarged lymph gland, either over the mastoid, beneath the lobule of the ear, or immediately in front. Any of these may be enlarged from a small cutaneous lesion in the meatus insufficient in itself to cause pain. The mastoid gland again may become enlarged from the bite of the head louse. It needs sometimes the very closest examination to distinguish between a nit and a particle of dandruff sticking to a hair. Another lesion which may cause this gland to be enlarged in a woman is a scratch in the scalp from a hairpin or a hatpin. Pain near the ear may also be caused by a lesion of the temporo-mandibular joint or of the parotid.

Earache Without Apparent Lesion.

When all these regions have been examined there remain a few cases of earache in which no lesion is immediately apparent. Sometimes a minute piece of hard wax, perhaps no larger than a pin's head, sticking on the drum-head may cause the symptom. Cases have been known in which persistent earache has been relieved by paracentesis, although no change could be seen in the drum-head, and no tension was apparent when the incision was made. But before this operation is performed the mouth must again be examined. An unerupted and impacted lower wisdom tooth pressing against the molar in front of it may cause earache; this will be discovered or excluded by means of the X ray. In the adolescent an erupting lower molar may have the same effect. Lastly, it is possible that the mere distension of a crypt or crypts or the supra-tonsillar fossa of the tonsil by one or more of those ovoid soft concretions that can so often be expelled therefrom may be a cause of earache. If such a thing were suspected the treatment would be to empty the cavity if necessary after slitting up its orifice.

T. B. LAYTON, M.B., B.S. Lond., F.R.C.S. Eng.,
Surgeon in Charge, Throat and Ear Department,
Guy's Hospital and St. George's Dispensary.

Corrigendum.—In Dr. J. B. Mennell's article on the Treatment of Sprains, which appeared last week under this heading, the sentence p. 816, col. 2, line 51, should read: "When swelling has disappeared *from the front of the elbow* restoration of movement," &c.

OPHTHALMIC HOSPITAL OF THE ORDER OF ST. JOHN, JERUSALEM.—The report of this hospital for 1923 records the great increase in the amount of work accomplished since the war—14,777 new cases as compared with an annual pre-war average of 9849—an increase made possible by extension of the buildings and an increase in the subordinate personnel. The number of operations, most of them (62 per cent.) for trichiasis, has increased from 1926 to 4169, while the number of surgeons employed is only two, so that in the opinion of the warden the limit has been reached in this direction until a third surgeon is appointed. The need is pressing. During the past year approximately one-half only of the cases requiring operation could be admitted or operated on as out-patients. The remainder had to return to their villages unrelieved and disappointed.

ROYAL WEST SUSSEX HOSPITAL.—The annual report of this institution for the year which ended on Dec. 31st, 1923, is a document more satisfactory than others of recent years, for the statement of accounts shows a small balance in hand, while the expenditure shows an appreciable decrease and the income has been fairly maintained. The income for 1923 was £9816, and the expenditure £9752. The report for 1922 showed a cash deficit of £564. The in-patients treated during the year numbered 978 and the out-patients, who made 6713 attendances, numbered 1761. In addition, 1020 attendances were made in the X ray department, and 2509 in the electrical massage department. It is of interest to note that the board of the hospital keeps in close touch with the work of other hospitals by the attendance of its representatives at the meetings of the Regional Committee for Hants, Dorset, and West Sussex at different hospitals.

Special Articles.

BRITISH EMPIRE EXHIBITION, WEMBLEY.

TROPICAL HEALTH SECTION.

It may not be generally known that in the Hygiene Section of the British Empire Exhibition as many as 27 different diseases are the subject of special educational propaganda. The section is housed in the Government pavilion and occupies one of the best positions in the exhibition. A small book, descriptive of this section, has been published with a view to bringing home to the public the great advances made in this field and to emphasise the imperial significance of tropical diseases.

The Tropical Health Committee.—With Sir Humphry Rolleston as chairman and Sir W. B. Leishman as deputy chairman, this Committee is composed as follows: Major E. E. Austen, Dr. Andrew Balfour, Sir P. W. Bassett-Smith, Dr. J. E. Butler, Sir R. Havelock Charles, Dr. J. B. Christopherson, Lieut.-Col. W. W. Clemesha, Dr. S. H. Daukes, Mr. G. C. Dudgeon, Dr. N. Bishop Harman, Mr. Guy A. K. Marshall, D.Sc., Dr. H. B. G. Newham, Prof. R. Newstead, F.R.S., Capt. J. Ramsbottom, Surg.-Commander T. B. Shaw, Dr. H. S. Stannus, and Prof. J. W. W. Stephens. Illustrations and specimens have been provided by individual contributors and by the Natural History Section of the British Museum, by the Liverpool School of Tropical Medicine, the Royal Army Medical College, the Royal Naval College, the Wellcome Bureau of Scientific Research, and the Imperial Bureau of Emtomology and Mycology.

Guiding Principles of the Exhibition.

The Tropical Health Section is intended to give a bird's-eye view of the various diseases dealt with—how they are caused and prevented. It is essentially an exhibition for the layman, but no attempt has been made to soften the picture which is presented in all its naked truth for the benefit of the administrative layman who has to deal with the problems arising from these diseases. The Tropical Health Section is in four parts. There is a jungle scene devised to emphasise the material benefits to be derived from well-regulated preventive measures, and the differences between 50 years ago and to-day are contrasted in two well-planned tableaux. The second part, or Disease Section, deals with 27 diseases, and one portion is devoted exclusively to that large group, the diseases in which are spread by biting insects. Each disease is briefly described with the help of pictures, photographs, models, and specimens, and there is a short introductory account of its history and the means at present available for fighting it. There are also specimens and models of the insects which play a part in disseminating these diseases. This portion includes such diseases as malaria and yellow fever. Another group of diseases are those essentially due to intestinal infections, such as typhoid fever. Food-deficiency diseases are represented by scurvy and beri-beri, and considerable space is devoted to skin diseases, yaws, and leprosy. In the third section, devoted to hygiene, a uniform illuminated device is employed to provide statistical information at a glance. The fourth section deals with plant diseases.

Tropical Diseases.

Sleeping Sickness, Malaria, Blackwater and Yellow Fever.—Special attention is called to photographs of natives suffering from sleeping sickness, the characteristic somnolence, emaciation, and puffiness of the face being well shown. Wax models and specimens of the tsetse-fly and its developmental stages, and photographs depicting its haunts and breeding-grounds are shown. It is pointed out that a well-organised campaign against the tsetse-fly may practically stamp out the disease, as has been proved in the Island of Principe. The malaria exhibit is remarkably complete; a central exhibit shows by means of models and actual specimens the stages and processes of breeding, and there are models of the parasite in the human and mosquito stages. There are several illuminated devices demonstrating the value of preventive measures. The relation of blackwater fever to malaria is briefly discussed, and a short account is given of the genesis and course of yellow fever. A model is shown of the "tiger mosquito" responsible for this disease, and an interesting account is given of how small fish may be employed to eat the larvæ in the breeding places of this mosquito. A pictorial account is given of the recent successful campaign in Guayaquil against this mosquito.

Dengue Fever, Filariasis, Guinea-worm Disease, and Relapsing Fever.—The relation of dengue fever to mosquitoes is pointed out, and in the exhibit devoted to filariasis there is a specimen of elephantiasis of the leg showing the gross deformity resulting from this disease. There is also a wax model of "Calabar swelling" caused by the West African "loa loa" worm. The life-history of the guinea-worm is also pictorially described, and there is a model of the ulcer produced by the female worm. There are also specimens of the water flea in which the embryos of this worm develop. The various spirochætes responsible for relapsing fever, syphilis, and other diseases are demonstrated, and their mode of propagation explained.

Plague, Sandfly Fever, Rocky Mountain Fever, Oriental Sore, and Trachoma.—There are photographs and paintings of plague patients and pathological specimens illustrating three varieties of this disease. There is much in this exhibit of historical interest, and the leaden crosses, which were buried with plague corpses, are shown. The costume worn by physicians attending plague patients, and certain instruments for opening the buboes, are included among the exhibits, which also show ancient pictures of incidents connected with plague. There are original paintings showing the development of the sand-fly, and this particular exhibit gives a good idea of the detailed work required to investigate a disease caused by an insect hardly large enough to be visible to the naked eye. The exhibits of Rocky Mountain fever and "Oriental sore" are an eloquent tribute to the efficiency of research, and it is pointed out how recent advances in treatment as well as prevention have made the outlook for these diseases much more hopeful. There are excellent paintings emphasising the seriousness of trachoma, and justifying the elaborate efforts made to keep this disease out of the British Isles by the Alien Acts.

Dysentery, Typhoid and Paratyphoid Fevers, Cholera, Hookworm Disease, and Bilharziasis.—There are some excellent pathological specimens showing liver abscess following amœbic dysentery, and special attention is directed to the decline in the typhoid and paratyphoid fevers by an illuminated statistical device contrasting the incidence of these diseases in the South African campaign and the late war. An exhibit of the method of preparing vaccines shows the meticulous care taken to guarantee purity and accuracy of dosage. In connexion with the typhoid group of fevers there are sundry exhibits drawing attention to the possible dangers of eating shell-fish "fattened" in polluted water, and of eating uncooked vegetables, such as watercress, contaminated by sewage. With reference to the mortality from cholera, it is interesting to note the illuminated statistical device showing the efficiency of intravenous injections of saline solution as advocated by Sir Leonard Rogers. There are also paintings illustrating the causation of cholera. The methods by which the hookworm attaches itself to the intestines are illustrated, and there are large wax models of the heads of the two species of hookworm which give most trouble. The exhibit of bilharziasis stresses the value of preventive measures; this disease has recently been located in Portugal.

Scurvy, Beri-beri, Pellagra, and Tropical Skin Diseases, including Leprosy.—The relation of scurvy to diet is driven home by an exhibition of samples or models of various anti-scorbutic foodstuffs. There is a specimen of a dilated heart from a case of severe beri-beri to teach the lesson that acute heart failure is one of the chief dangers of this disease. A sample of the diet consumed by a ship's crew suffering from beri-beri is shown. The existence of pellagra in our midst is drawn attention to by paintings of patients observed in English asylums. Various rare skin diseases in the tropics are demonstrated by photographs, and the problem of leprosy is dealt with by paintings, photographs, and illuminated statistics showing the effects of preventive measures.

Sunstroke.—There are various exhibits showing the means best suited to the protection of the head and spine by helmets, spine pads, and other contrivances, and there is a small model of a double-roofed tent. There is also a rough model of the improvised bath-house used in emergencies with success for the treatment of heatstroke in Mesopotamia.

Model of a Tea Garden.

The central exhibit contains a model of a manager's bungalow built in two storeys, the upper being carefully screened with mosquito gauze, and containing five rooms in the form of a cross which gives the maximum amount of outside wall, and catches every breath of wind. A house of this kind should be healthy in almost any country, however malarious. The latrines are connected with the main block by a masonry path devised to prevent hookworm disease. The banks of the stream which runs through the garden are riveted with brick to prevent mosquito breeding, and there is an arrangement for oil to drip into the water to render it less attractive to the mosquito.

Pilgrimages, Marine Quarantine, Vaccination, Oriental Sanitary Appliances, and Chlorination of Water.

Pictures are shown illustrating the sanitary problems associated with pilgrimages and festivals, and useful hints are given as to the sanitary arrangements necessary for such a situation. In the Marine Quarantine exhibit there are shown models of port health officers' boats especially prepared for isolating a patient with yellow fever from the local mosquitoes. The method of preparing vaccine lymph from calves is demonstrated, and it is shown how much more troublesome this process is in hot than in cold countries. Dr. Allan Green's apparatus for purifying calf lymph with chloroform is also demonstrated. The sanitary fittings usually found in European houses not being always to the likings of the conservative Oriental, English manufacturers have designed special fittings to closets, urinals, &c., for the needs of India, China, and the Far East; these fittings are said to be much superior from a sanitary point of view to anything which can be manufactured in the countries for which they are intended. Apparatus for the chlorination of water is also displayed.

The keynote of the Tropical Health Section is hopeful realism; its realism must be almost painful to some laymen, but there can be no doubt as to the hopefulness of the outlook, of the prospect that in the near future many of the Empire's territories will cease to deserve the title "The White Man's Grave."

NEW CORONER FOR SOUTH LONDON.—To fill the vacancy caused by the death of Mr. G. P. Wyatt, the London County Council has appointed Surgeon-Commander A. D. Cowburn, M.R.C.S., D.P.H., L.R.C.P., Barrister-at Law, to be coroner for the Southern District of the County of London. The inclusive salary attaching to the office is £981 18*s*. per annum, but it is probable that the Duchy of Lancaster will appoint Commander Cowburn to the vacant franchise district of Clapham at a salary of £59 8*s*. a year, making the combined salary £1041 6*s*. a year. A condition of the appointment is that the occupant shall "devote his whole time to the duties of his office, not practise any profession or hold any other public appointment, and resign on attaining the age of 70 years."

THE TUBERCULOSIS SOCIETY:
MEETING AT CAMBRIDGE.

(*Concluded from p. 818.*)[1]

FOLLOWING the papers reported in our last issue which were read at the Cambridge meeting of this Society, Dr. A. Stanley Griffith gave a communication on

Lupus.

Dr. Griffith's paper dealt with atypical tubercle bacilli in natural tuberculosis with special reference to those occurring in lupus. Since Cobbett first isolated an atypical strain of tubercle bacillus from a case of lupus, the bacteriology of lupus has been investigated by Dr. Griffith. Dr. Griffith's work was carried out in the Field Laboratories, Milton, and he paid a tribute to Sir G. Sims Woodhead's encouraging support. In the first series of 20 cases of lupus there were only three strains conforming to definite types, the remainder did not conform exactly either to the human or to the bovine type as far as their virulence to experimental animals was concerned. Culturally, the strains could be classified as bovine or human. The main objects of subsequent investigations were (1) to search for atypical strains in other varieties of human and animal tuberculosis, (2) to seek direct evidence of modification of strains in skin lesions, and (3) to ascertain if, by examining a large number of cases of lupus, the finding of the high proportion of atypical strains in the first series could be confirmed. The observations of Dr. A. Eastwood and Dr. F. Griffith between 1911 and 1916 were incorporated with those of Dr. A. S. Griffith. In the human subject atypical strains were found at first only in lupus, but in the later investigations atypical strains were obtained also from other varieties of human tuberculosis. Strains with modified virulence resembling those from lupus were, however, very uncommon and occurred only in about 0·6 per cent. of the cases. The avian tubercle bacillus was not found in the human being. In animals atypical tubercle bacilli were not of frequent occurrence. Of 132 cases of tuberculosis in the pig, 94 were due to the bovine type, 31 to the avian, four to the human type, and in three cases the infection was due to more than one type of tubercle bacillus; only three of the porcine strains were atypical. In the six cases in which tuberculosis in the horse was investigated, the type was invariably bovine, although in three of these cases the characters of the bacilli were not in every respect strictly those of the bovine type.

Up to date 140 cases of lupus have been investigated, the tubercle bacilli being classified according to their behaviour on culture and their virulence to rabbits, guinea-pigs, and certain other experimental animals. Two main groups, each with a subgroup, were distinguished. Of the 71 cases showing typical bovine characteristics on culture, 22 were characteristically virulent to all the species of experimental animals tested. Of the 66 cases showing typical human characteristics on culture, 19 showed standard virulence to experimental animals. There were also three cases in which the strains were atypical in cultural characteristics. It was noticed that there were no clinical features distinguishing cases of lupus according as the infection was of the bovine or human type. With regard to the question, "Do the atypical lupus tubercle bacilli acquire their special characteristics during residence in the cutaneous tissues?" Dr. Griffith stated that all the evidence goes to show that lupus is produced originally by tubercle bacilli of normal virulence, and that their virulence becomes modified in the course of the disease. The evidence in support of this view is direct and indirect. With regard to the former, re-examinations were made of 24 cases of lupus, the characters of the strains in one and the same case being compared on different occasions. In 6 of these 24 cases the first strains were fully virulent bovine tubercle bacilli, and in each instance the second, or a later, strain was definitely less virulent than the first, though the tubercle bacilli were unaltered in cultural characteristics. As to the suggestion that daylight may attenuate the virulence of tubercle bacilli in the cutaneous lesions of lupus, Dr. Griffith had been unable to find uniform differences in the virulence of tubercle bacilli obtained from lupus areas exposed to, or concealed from, daylight. In one case a fully virulent bovine strain was obtained from lupus of the face of 33 years' duration.

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[1] In the report last week of Dr. Matson's remarks on American tuberculosis work the death-rate in 1910 of 202 and in 1922 of 94·2 should, of course, have been given as *per 100,000*.

Lupus being common in the exposed parts of the skin, it was thought that the subnormal temperature of the skin of these parts might affect virulence, but passage experiments through toads did not support this hypothesis, though the duration of residence of tubercle bacilli in toad tissues was as long as seven years. No decrease in virulence or change of cultural properties being observed, support was not given to the view that mammalian tubercle bacilli could be easily modified in the tissues of cold-blooded animals. Dr. Griffith had noticed that although tubercle bacilli had lost their virulence to the experimental animal, there was no loss, but rather an increase, of their virulence to the individual suffering from lupus. Hence the conclusion that the changes observed in the pathogenic properties of tubercle bacilli during residence in lupus lesions are not degenerative, but the result of adaptation of the bacilli to conditions in the skin, different from those which obtain in other organs, of the nature of which we have no definite knowledge.

Other points in the paper were that passage of atypical tubercle bacilli through the guinea-pig did not influence their virulence, and that from the same patient different strains might be obtained, the virulence of which was not identical. He had also noticed that cultural qualities were more stable in the human body than the degree of virulence to the experimental animal. In addition to his communication on lupus, Dr. Griffith gave much information about the character of the infecting organism in the cervical gland and other varieties of tuberculosis of man, and he showed how the incidence of bovine infection declined as the age of the children examined increased. In the discussion which followed, Dr. S. Roodhouse Gloyne dwelt on the apparent waywardness and variability of guinea-pigs which are not obliging enough to behave with the frigid uniformity of the standardised test-tube. He also observed that giant cells seemed to be more common in tubercles provoked by the human type than in those due to infection with the bovine type.

Mr. G. R. Girdlestone read a paper on

The Present-day Treatment of Bone and Joint Tuberculosis.

His paper, in which he outlined general principles and considerations, but gave no statistical account of his own work and of the results achieved, laid special emphasis on the importance of allowing plenty of time for the treatment of surgical tuberculosis. He confessed that the believer in the short cut to health was anathema to him, and though he admitted that heliotherapy might be beneficial, he did not confess to that frantic enthusiasm exhibited by the devotees of this cult. Certainly, the child who pigmented well under the sun was likely to do better than the child whose skin did not pigment easily, but it was a far cry from this observation to the deduction that pigmentation itself was the main beneficial factor. In this connexion he pointed out that between the old days of white children and these days of brown children, there was a decade or so when rosy-cheeked children thrived in open air wards. The rosy-cheeked child seemed no longer to be fashionable in institutions for surgical tuberculosis, although of the vigorous health of this breed Mr. Girdlestone was convinced. As long as the disease was acute, he was sure that immobilisation was essential. With regard to the value of Albee's and similar operations, he was not in favour of them for the child, for whom time is not such a vital factor as it is for the adult. Again, a child's bone-graft is apt to be too weak and elastic to immobilise the spine effectively. He was, however, in favour of bone-grafting operations in certain adult cases of Pott's disease. He had found ultra-violet light most beneficial when tuberculous lesions were superficial. Bier's treatment by passive congestion did not impress him, and he observed that Rollier prefers to keep the diseased limb tilted up.

Mr. A. Cook, of Addenbrooke's Hospital, gave an account of a visit to the Finsen Institute in Copenhagen, where he had studied the treatment of surgical tuberculosis with universal carbon arc light, the clothing of the patients being limited to spectacles. He mentioned a case of Pott's disease, illustrating the difficulties a young surgeon may encounter when an eminent consultant reverses the correct diagnosis. The patient had been treated for Pott's disease by immobilisation for two years, at the end of which the eminent consultant appeared on the scene and diagnosed "hysterical spine," for which diagnosis the patient had to pay some time later with a tuberculous knee, which the most eminent of consultants could hardly have regarded as hysterical.

Visit to Papworth Colony.

The meeting of the Tuberculosis Society ended on April 12th with a tour of inspection of the Papworth Colony, where Dr. P. C. Varrier-Jones answered many scores of questions fired at him by visitors, most of whom possessed expert knowledge of the administration of institutions for the tuberculous. The success with which he came through this ordeal was certainly a tribute to himself and, perhaps, to the soundness of the scheme to which he has devoted unceasing energy for many years.

MEDICAL WOMEN'S FEDERATION.

MEETING OF COUNCIL.

A meeting of the Council of the Federation was held at the London School of Medicine for Women, 8, Hunter-street, London, on April 12th, Lady Barrett, President of the Federation, being in the chair. Among the various matters considered the following were of special interest.

The plan of action of the Medical Women's Federation with regard to equal pay for men and women in the profession for all posts was brought up for reconsideration. It was pointed out that an increasing number of public authorities were attempting to obtain medical women at a lower salary than medical men, and were offering them £500 for posts where the British Medical Association minimum salary would be £600. Many instances were reported where women candidates had refused to take such a post, owing to the representations of the Medical Women's Federation, the British Medical Association, and the Society of Medical Officers of Health, and in one case, at any rate, the salary had in consequence been raised to £600 and the woman appointed. It was considered, however, that under the present circumstances it will be a work of great difficulty to prevent women accepting posts below the British Medical Association minimum, and success can only be looked for if the support of the men in the profession is given. It was felt strongly that the subject concerned the profession as a whole, a point of view which the British Medical Association has always maintained. To accept the principle of lower pay for women than for men, for equal work, would mean not only the introduction of competition between the sexes on very undesirable lines, but would almost certainly lead in the long run to the lowering of salaries for men also. In conclusion, a resolution was proposed and passed unanimously that:—

"The Medical Women's Federation reiterates its firm conviction of the absolute necessity for maintaining the principle of equal pay for equal work as between men and women."

Reports were received and discussed from the various subcommittees of the Federation and from its representatives on the British Medical Association committees and other bodies. The report of the Venereal Diseases Subcommittee brought forward evidence of extremely unsatisfactory conditions permitted in some of our Chinese colonies, and the following resolution, to be sent in to the Secretary of State for the Colonies, was moved and carried:—

> "The Medical Women's Federation calls upon the Government to bring the Crown Colonies into line with the British law in regard to the penalties for brothels and disorderly houses, and, particularly in the case of Hong-Kong and the Straits Settlements, to break up and abolish all existing vice areas or streets where brothel-keeping is at present allowed."

Miss Mabel Ramsay, the Federation's representative on the British Medical Association Insurance Acts Committee, reported the very satisfactory work that had been accomplished by that Committee, and proposed that a vote of thanks should be sent by the Federation to the chairman, Dr. H. B. Brackenbury, and the officers of the British Medical Association for the care and skill taken in presenting the case for the panel doctors to the recently held Council of Inquiry. This was passed unanimously. Five members were elected to represent the Federation on the Council of the Medical Women's International Association—Lady Barrett, Dr. Christine Murrell, Dr. Jane Walker, Dr. Dickinson Berry, and Miss Louisa Martindale. The meeting of the International Association will take place on July 15th, 16th, and 17th at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W.

The Council received with deep regret notice of the death of two of its members, Dr. Ann E. Clark and Miss Ethelberta Claremont.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Asylum Strike in Donegal.

THE difficulties in the Tirconaill Mental Hospital, Letterkenny, produced by the strike of attendants, appear not to have been completely surmounted. Reports a few days ago stated that the situation was normal, the committee having been able to secure the services of a number of demobilised soldiers to act as attendants on the male side. But there have since been accounts of retaliation on the old staff by the new female attendants. One can hardly suppose, in any case, that a staff of trained attendants can be replaced in a moment by a band of untrained persons without grave loss of efficiency. It is to be hoped that the Government will order an inquiry into the events which led up to the strike. On the face of it the committee seems to have acted in an imprudent, or even provocative, manner. Since 1920 there has been in force an agreed rate of remuneration to the attendants in all the asylums in Ireland. This rate was settled at a conference between representatives of the committees and of the attendants in all the asylums. Recently, the committee of the Tirconaill Mental Hospital at Letterkenny notified the staff of its intention to make a cut of 10 per cent. on the current wage. The order was peremptory and made without any conference with other asylum authorities or with the attendants. At the same moment a vacancy occurred for a head attendant, and the committee made it a condition of appointment that the head attendant should not be a member of the attendants' union. This stipulation, even more than the cut in wages, appears to have irritated the attendants.

The Apothecaries' Hall.

The Apothecaries' Hall has given notice of its intention to apply to the Oireachtas in the present year for permission to bring in a Bill, the main object of which is to alter the title of its licentiates. At present the licentiate is styled simply "Licentiate of the Apothecaries' Hall, Dublin," and the Hall wish in future to use the description, "Licentiate in Medicine and Surgery of the Apothecaries' Hall, Dublin." No doubt such a change would, in itself, be an advantage both to the licentiates and to the public, since the present title fails to make it clear that the licentiate is qualified to practise medicine and surgery. A change of this sort would be useless, however, unless the new title were registrable with the General Council of Medical Registration and Education. The Hall, therefore, asks in its Bill that the registrar of the branch council should be empowered to register the proposed title as a qualification to practise medicine and surgery. If the Bill is proceeded with, it will raise in a difficult form the question of the relation of the Oireachtas to the Medical Register.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Essential Property of Homologous Milk.

ON March 28th last Prof. H. Finkelstein, of Berlin University, addressed the Medical Society of Johns Hopkins Hospital on the Inferiority of Cows' Milk Feeding in Human Beings. Referring to the so-called "modified" or "humanised" milk, he said that he knew of nothing more liable to produce acute diarrhœa in human infants. Since the resulting diarrhœa is acid the cause must be fermentation not of proteins, as many theorists had claimed, but either of fats or of sugars. Prof. Finkelstein regarded the problem as a race between absorption and fermentation, the infant suffering from heterologous milks because of the delay in their absorption. That this delay actually is constant with heterologous milks he has himself shown by plotting the blood-sugar curve for infants after ingestion severally of human and of cows' milk. The curves reproduced at this lecture showed that the heterologous milk was absorbed much more slowly and less completely than the homologous, so that absorption of lactose from cows' milk was completed an hour and a half to two hours after the human milk lactose would have been completely absorbed. He was not able to point to the specific substance in heterologous milk which causes this delay, or to any specific material in homologous milk which stimulates absorption. Cows' whey was found to be delayed in its absorption equally with milk. However, if the albumin is removed from this whey, or if the whey is dialysed, the sugar in the resulting fluid is absorbed as rapidly as that in homologous milk. Dr. Finkelstein suggested that not only is the delayed absorption of cows' milk responsible for acute diarrhœa, but also that many of the chronic dystrophies may be charged to a condition of acidosis resulting from incomplete metabolism, also due to the inadequate supply of sugar to the blood-stream. Thus is opened up to the biochemist a field of investigation full of promise.

Nursing Standards.

The movement to establish the full professional status of nursing in this country gains impetus month by month. The new Yale School of Nursing has issued a prospectus for the coming academic year—the first of its existence. It will be remembered that this school is largely due to the generosity of the Rockefeller Foundation and that its aim is primarily to secure efficient nurses for the more important posts in public health work, bearing in mind the rapidly increasing demand for such workers to keep pace with the swift evolution of public health work throughout the States. At Yale the professional training of the student in the actual care of the sick will be strengthened by a knowledge of the underlying theory in regard to disease as well as the social, psychological, and hygienic aspects of the case. Specialised training is offered in medicine, surgery, obstetrics, and pædiatrics. Full information can be had from the Dean.[1]

A somewhat similar, but in some respects more extensive, scheme has been organised in the Middle West in connexion with Antioch College. The latter institution, though founded by Horace Mann in the middle of the last century, has during the past two or three years been reorganised on an original plan which is creating much interest among American educationists. With the object of developing an all-round character, rather than to pay their way through college, the students spend each alternate five weeks of their college life employed in the factories and businesses of the near-by cities. This is not the place to discuss the merits or demerits of this kind of education,[2] but the development of a nursing school out of this general scheme is distinctly of interest. The course lasts typically for six years. The candidates receive as much theoretical training at the Miami Valley Hospital as nurse probationers normally receive. In addition, during alternate five-week periods they are taking the course for the B.S. degree only slightly modified to give emphasis to their especial interests. At the end of five years they receive their nurse's diploma. It is intended that the last year in college shall be spent in completing the science course and in obtaining practical experience in public health or industrial nursing. The geographical position of Antioch College and its close association with the large industries of the Middle West give it exceptional opportunities to find this kind of experience for senior students. The fact that during their five weeks in college the students are some 20 miles distant from the hospital wards must add a spice of variety to the training.

VIENNA.

(From our own Correspondent.)

Treatment of Climacteric Condition by the Action of X Rays on the Hypophysis.

In the Vienna clinics experiments are being conducted with a view to alleviating the worrying conditions of the climacterium by applying X rays to the hypophysis. At a recent meeting of the Medical Society Dr. Borak reported on the results obtained by this method in 25 women treated in the X ray department of Prof. Holzknecht. The patients had either been operated on for abdominal conditions or had been previously treated by X rays for myoma or dysmenorrhœic complaints. When climacteric conditions supervened, Dr. Borak applied small doses of X rays to the hypophysis. The effect was most gratifying. Headaches and vertigo disappeared, congestions were much less frequent, and the sleep improved. In one case only was the method unsuccessful, and the patient received hereafter an application over the thyroid which proved efficacious. The correlation between ovary and hypophysis, as well as between thyroid and hypophysis, is well known. The rationale of X ray applications to the hypophysis was based on the resemblance of climacteric conditions to vasomotor hypersensitiveness due to endocrine disturbance. The rays pass through the brain substance, which is not sensitive to them. In order to exclude suggestion, in some cases a lead filter was interposed so as to exclude all rays without the patient knowing it. No effect was noticed in such instances, but it appeared immediately when the filter was removed. Dr. Pohler, from the II. Gynæcological Clinic, reported on 165 patients subjected to the same method of treatment. He treated 54 cases of amenorrhœa, 52 of dysmenorrhœa, 51 with climacteric complaints, and 8 with dystrophia adiposo-genitalis. The last-named group showed no effect at all, but 50 to 80 per cent. of all the other cases had a marked improvement. All cases received repeatedly small doses only. The effect seems to persist for some months and is regarded by Holzknecht rather as the stimulation of a hypo-functionating gland than as the depression of a hyper-function. The addition of lime to the diet of these patients is also beneficial.

Statistics of Deaths due to Poison.

Quite a number of criminal attempts at poisoning have recently turned the attention of the public to the importance of poisonous substances obtainable without much difficulty by any would-be murderer. The records of accidental poisoning—chiefly in factories and workshops—also show that many people are handling poisons daily without due precautions. A report by the Board of Health of Vienna on the autopsies of the last 40 years conducted for forensic purposes—i.e., where death was due to external violence—states that out of 9664 such autopsies nearly 10 per cent. (948) were necessitated by poison. These deaths include 296 cases caused by gas; 144 by mineral acids and alkalies; 20 by mercuric chloride; 104 by phosphorus—no doubt taken as an abortifacient; 27 by arsenic; of these last-named only two cases were criminal. Forty-four deaths were due to poisonous mushrooms; 55 to veronal; carbolic acid killed 48 persons, whilst 46 succumbed to morphia, opium, or codeine; amongst these, two infants under 12 months, poisoned accidentally by an overdose of codeine. Prussic acid or potassium cyanide was the cause of death in 39 cases, potassium chlorate in 6, strychnine in 5, methyl alcohol in 9, whilst benzene and gasoline proved fatal in 5 instances and carbonic acid (CO_2) and CO in 26. It is interesting to note how few cases of criminal poisoning really prove fatal; arsenic in particular is "not reliable," whilst lead carbonate is slightly more popular with murderers. The chief source of danger of poisons is the neglect of precautions by factory workers. With the improvement of the system of industrial inspection, as stipulated by the new Factory Inspection Act, a large percentage of these accidental cases will be done away with, and the prohibition of the use of white phosphorus, which has now been in force for a few years here, has also had a most welcome effect. But of late cocaine hydrochloride has become a very potent source of danger. The cocaine habit has caught hold of so many of our weakened, morally unstable citizens that the police have had to take a firm stand against sellers of the drug to stop the traffic in restaurants and public-houses. Several fatalities have already been reported as a consequence of this habit.

Municipal Welfare Centres for Pregnant Women.

The Municipal Board of Health has organised an interesting system of maternity welfare centres, which has been in efficient working order now for some time. Out of the total of approximately 30,000 parturient women per year, 10,000 belong to the so-called better classes, 15,000 are members of one or another Krankenkasse, and the remaining 5000 have no corporation or wealthier friends to look after them. It is to these 5000 women that the municipal board turns its attention. In order to induce prospective mothers to apply to them the maternity centres offer a weekly grant of 50,000 kronen, together with free advice, treatment of the newborn, and free milk—all for a period of at least four weeks. The conditions are that the woman does not belong to a Krankenkasse, that she is poor, and that she submits, within the first four months of her pregnancy, to a Wassermann test. By this means the Board tries to find out all cases of syphilitic mothers and to subject them to a vigorous specific treatment. Statistics show that among 1700 syphilitic females who received no treatment during their pregnancy, 34 per cent. had a stillborn child or an abortion, 56 per cent. were delivered of a living child, which did not survive longer than five years, and the offspring of the remaining 10 per cent. lived longer, but were not healthy—they filled the hospitals and criminal asylums or were cripples. The years of war have resulted in a widespread infection of the lower classes, and the advantage of having yearly 5000 of the future mothers under control is obvious. Fifteen such maternity centres have been opened in Vienna, and have taken up their work. No doubt, in a short time the Krankenkasse will have to follow the example set by the city authorities.

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[1] Yale School of Nursing, Brady Memorial Laboratory, 330, Cedar-str., New Haven, Connecticut.

[2] Literature will be furnished, on request, by the Dean, Antioch College, Yellow Springs, Ohio.

Unveiling of a Commemorative Tablet to Zuckerkandl.

A short time ago an "In Memoriam" tablet to Prof. Zuckerkandl, the famous teacher of anatomy, was unveiled in the University hall of Vienna in the presence of a large gathering of former pupils and friends of the deceased. To illustrate the importance of this man's work, I may say that the astonishing development of modern rhinology is based principally on his researches into the anatomical conditions of the nasal structures and the accessory sinuses. A splendid collection of dry and wet specimens formed the foundation of his publications and is the pride of the Vienna Anatomical Institute. In addition, he was an excellent teacher, always prepared to keep the attention of his pupils by interesting comparisons with pathology, and, moreover, he was a keen artist, who imbued all who came in touch with him with the sense of beauty, even in the most unexpected objects. Prof. Tandler, pupil and successor of the celebrated teacher, handed over the tablet to the authorities of the University.

Summer Post-Graduate Courses.

The fees for University studies have been increased for the coming term to such an extent that they form a heavy burden to the poorer classes of students. Also the fees for matriculation for the degree of M.D. and for the doctor's diploma have been raised, the latter now costing 650,000 kronen, or £2. The classes for post-graduate work have become more expensive in proportion, especially for foreign students, but still they are below the pre-war rates if the gold value is taken as a standard. Yet the attractions of the numerous excellent post-graduate classes are so great that students flock from all corners of the world; the classes in July, August, September have already enrolled almost their full complement.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

"Loans of Honour" to Students.

LARGE numbers of students have been compelled to give up their studies owing to the rise in the cost of living, for although bursaries are provided by the various faculties, these cover the fees only, and the student must find for himself the money to meet the expenses of lodgings, food, and clothing during the years of his academic life. To render help in this necessary outlay the State has instituted, by a decree recently voted by the Chamber of Deputies, a system of "loans of honour." A student who requires aid may submit his request for a loan to a commission consisting of representatives of both professors and students, on the understanding that the money shall be refunded by him after graduation as soon as his means permit.

Franco-Anglo-American League against Cancer.

A general meeting of this League was held on April 8th, at which Senator Paul Strauss presided. The League was founded during the war with the object of attacking by every means the problem of the dread disease, and is a fine example of what can be done by international coöperation, not for the destruction but for the amelioration of human life. This year the League has established branches in Greece and in Spain, and year by year its work, scope, and material resources are becoming more and more important. It is only by united effort, financial as well as scientific, that the sinews of this war can be strengthened, and on April 12th the League held a remarkably fine exhibition of all the works of the painter Degas. This exhibition, which was inaugurated by the Queen of Roumania, realised a large sum of money; a programme signed by the Queen was sold for 1500 francs, and a flower which she had worn brought 500 francs.

Reception of Scottish Medical Students.

The annual visit of some 50 medical students of both sexes from Edinburgh University, who have come to take the course of instruction in our obstetrical clinics, began on Sunday, April 6th, when the Scottish students were met at the Gare St. Lazare by a delegation of their Parisian comrades and representatives of the Section of Medicine of the Association Générale des Étudiants. As in former years, the Association undertook the organisation of the visit. Prof. and Mme. Brindeau greeted our new guests, and after a cordial welcome and enthusiastic hurrahs several charabancs took the visitors to the Students' Union for supper, at which Mr. Gannat, in the name of the Section of Medicine, proposed the toast of "The Scottish Students," to which Mr. J. B. Colquhoun replied. On Monday, at 9 o'clock, a formal reception was held by the Dean, assisted by Profs. Brindeau, Couvelaire, and Jeannin, and the Dean expressed the honour which was felt by the Medical Faculty of Paris in welcoming the guests. Afterwards the students were allotted to the clinics of La Pitié, Baudelocque, and Tarnier. The Section of Medicine received the professors and the Scottish students on Thursday, April 10th, on the occasion of a soirée artistique.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs.: W. T. Haydon to the *Ajax* (on becoming ship of Senior Officer, Reserve Fleet, the Nore); P. T. Nicholls to the *Centurion*, as Squadron Medical Officer (on transfer of flag); and F. Cock, to the *Thunderer* (on becoming ship of Senior Officer, Reserve Fleet, Devonport).

Surg. Lt.-Comdr.: S. R. Johnson, appt. to R.N. Sick Quarters, Dartmouth (cancelled).

Surg. Capt. E. Sutton to be Surg. Rear-Admiral.

Surg. Capt. H. C. Whiteside assumes charge of the R.N. Sick Quarters at Shotley Boys' Training Establishment, and Surg. Capt. L. M. Morris is appointed to Haslar Hospital.

Surg. Capts.: R. F. Clarke to the *Vivid*, addl., for R.N. Barracks, Devonport; J. H. Fergusson to the *President*, addl., for three months' post-graduate course (on relief); E. Cameron to the *Cardiff*, as Squadron Medical Officer; and W. N. Blatchford to the *Pembroke*, addl., for R.N. Barracks, Chatham.

Surg. Lts.: J. Gaston, to the *Ajax* (on becoming ship of Senior Officer, Reserve Fleet, the Nore); and A. C. Esmonde, to the *Centurion*, for Squadron duties (on transfer of flag).

F. B. Quinn to be Surg. Lt.

ROYAL AIR FORCE.

F. T. Boucher is granted a short service commission as a Flight Lt.

INDIAN MEDICAL SERVICE.

Maj. P. K. Gilroy has been appointed to act as Senior Surgeon, Jamsetje Jaghibhoy Hospital, Professor of Surgery, Grant Medical College, and Presidency Surgeon, First District, Bombay. Capt. B. F. Eminson has been posted for general duty to St. George's Hospital, Bombay. Major R. H. Candy acts as Civil Surgeon, Hyderabad (Sind); Lt.-Col. R. F. Steel, Civil Surgeon, Ahmednagar, acts as Civil Surgeon, Poona; and Capt. E. T. N. Taylor acts for him at Ahmednagar.

VIENNA MEDICAL FACULTY.—The thirteenth international Course of Lectures in Medicine will take place in Vienna from June 16th to 29th inclusive, the subject being the Latest Developments in Surgery, Orthopædics, Urology, Gynæcology and Obstetrics, to be followed by a course of clinical instruction from June 30th to July 5th. A full programme may be obtained from Prof. Dr. A. Tischel, Dean of Vienna Medical Faculty, Universität, 1, Ring des 12. November, Vienna.

Medicine and the Law.

CRIMINAL RESPONSIBILITY: LORD DARLING'S BILL.

A BILL "to declare and amend the law relating to the criminal responsibility of accused persons" has been introduced in the House of Lords by Lord Darling and appears likely to become the law of the land before very long. It is a short measure containing only two effective sections, the first of which introduces an important and the second an unimportant alteration in the law under which a person alleged by those defending him to have been insane when he committed a criminal act may be found "guilty but insane."

Section 1, Subsection (1) of the new Act, if the Bill passes unaltered, will provide that "a person is not responsible to the law for an act or omission charged against him as a crime, if, at the time of doing the act or of making the omission, he is proved to be suffering from such a state of mental disease as deprives him (*a*) of capacity, at the time, to know, understand, and appreciate the physical nature and quality of the act done or omission made; or (*b*) of capacity to know, understand, and appreciate at the time that the act done or omission made was wrong." This is evidently intended to crystallise in the form of a statutory enactment, with somewhat different phraseology, the rule laid down by the judges in McNaghten's case, under which the defence must prove, in order to establish a plea of insanity, that "at the time of the committing of the act, the party accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing, or if he did know it, that he did not know he was doing what was wrong." It will be observed that, as in the rule that has hitherto prevailed, the Bill speaks of knowledge that the particular act done was "wrong." It does not suggest a general power to distinguish right from wrong, or to appreciate what is or is not unlawful. In this and other respects it appears neither to add to nor to detract from the effect of the rule in McNaghten's case.

Subsection (3), however, introduces a change long advocated by members of the medical profession, and suggests that observations of Lord Darling and other judges, when confronted with the suggestion of an "uncontrollable impulse" on the part of a prisoner before them, may have been due to a desire to administer the law as it stood, rather than to an uncompromising admiration of its effect. Paragraph (*c*) of Subsection (1) has for its object to render the accused not responsible to the law:—"If at the time the act was done or omission made he was suffering from such a state of mental disease as therefrom to be wholly incapable of resisting an impulse to do the act or to make the omission." It may be pointed out here that the mental disease must be such as not merely to weaken the power to control the impulse, but wholly to do away with it.

Subsection (2) of Section 1 deals with one of the points raised in McNaghten's case, the question of the weight to be given to delusions on the part of the prisoner in determining his responsibility. It provides as follows: "A person who is suffering from mental disease at the time of doing the act or of making the omission charged against him as a crime, and by reason of such mental disease is affected by delusions on some specific matter or matters, but whose mental condition does not render him irresponsible to the law within the meaning of Subsection (1) of this section, is criminally responsible for such act done or omission made to the same extent as if the facts with respect to which such delusions exist were real."

In McNaghten's case the judges were of opinion that "notwithstanding the party did the act complained of with a view, under the influence of insane delusion, of redressing or revenging some supposed grievance or injury, or of producing some public benefit, he is nevertheless punishable, according to the nature of the crime committed, if he knew at the time of committing such crime that he was acting contrary to law." The principle appears to be the same—that is to say, the delusions are not to be taken into account, as by themselves excusing an act which otherwise would constitute a crime. The Bill, however, ignores the suggestion that appreciation of the illegality of the act committed should form a test of responsibility.

Section 2 has for its object the substitution of a verdict of "not guilty on the ground of insanity," for that of "guilty but insane," now returnable under Section 1, Subsection 2, of the Trial of Lunatics Act, 1883. The change has often been advocated. It is obviously illogical to declare a man guilty and at the same time to absolve him from the usual consequences of an act for which guilty intent is essential.

The alteration of the wording of the verdict will make no difference to the manner of dealing with the person as to whom it is found, for only the subsection of the Act of 1883 referred to above is to be repealed by the new measure, for which the title "Criminal Responsibility (Trials) Act, 1924," is proposed, and which is not to extend to Scotland or Northern Ireland.

HARNETT *v.* BOND AND ADAM IN THE COURT OF APPEAL.

THE trial of the action brought by Mr. W. S. Harnett against Dr. C. H. Bond and Dr. G. H. Adam, arising out of the confinement of the plaintiff in various asylums, following a visit to the office of the Commissioners in Lunacy, when released on probation from Malling Place, where he had been under the care of Dr. Adam, was reported in THE LANCET of March 8th, p. 511. The appeal of the defendants, who asked for judgment or for a new trial, was heard by Lords Justices Bankes, Warrington, and Scrutton, the arguments of counsel occupying seven days. In the appeal Sir Douglas Hogg was added to the counsel who appeared for Dr. Adam, and Sir John Simon led for the respondent Harnett. The Attorney-General, Sir Patrick Hastings, as before, led for Dr. Bond.

It will be remembered that the jury gave the following answers to questions submitted to them:—

1. Did Dr. Bond cause the plaintiff to be detained at the office until the attendants came for him?—Yes.

2. Did he cause him to be sent back for the purpose only of his being examined by Dr. Adam or for the purpose of his being detained at Malling Place?—Being detained at Malling Place.

3. Did Dr. Bond cause the plaintiff to be taken back?—Yes.

Did he and Dr. Adam agree, after consultation, that the plaintiff should be sent for and taken back?—No.

Was the taking back entirely the act of Dr. Adam?—No.

4. Was the plaintiff of unsound mind on Dec. 14th, 1912?—No.

Was he fit to be at large?—Yes.

Was he dangerous to himself or to others?—No.

5. Did Dr. Bond honestly believe that the plaintiff was of unsound mind, not fit to be at large, and dangerous to others?—No.

6. Did he believe that the plaintiff had escaped from his brother's charge; and, if so, was that his reason for having him sent back?—Yes.

7. Did he take reasonable care to ascertain the true facts?—No.

8. Did he honestly believe that Dr. Adam had retained the power of retaking the plaintiff during his 28 days' leave of absence?—Yes.

9. Did Dr. Adam, when he received the telephone message and sent his car, honestly believe that the plaintiff, on Dec. 14th, 1912, was of unsound mind and unfit to be at large?—Yes.

10. Did he honestly believe that it was in the plaintiff's interest that he should be taken back to Malling Place?—Yes.

11. Did he take reasonable care in doing what he did?—No.

12. Did he make it known to the plaintiff that he was liable to be retaken if his mental condition required it?—No.

13. Was the detention of the plaintiff at the Commissioners' Office the act of Dr. Bond alone, or was it really the act of both defendants?—Dr. Bond.

As to damages, the jury awarded £25,000 against the defendants jointly, apportioning £17,500 as against Dr. Bond, and £7500 as against Dr. Adam. In the event of the defendants being held to be liable only for the detention of the plaintiff by Dr. Adam they awarded £7500 against Dr. Bond and £2500 against Dr. Adam, and alternatively for the detention of the plaintiff by Dr. Bond at the Commissioners' office, £5000 against Dr. Bond. Judgment on these findings was eventually entered by Mr. Justice Lush for £5000 against Dr. Bond, and £20,000 against him and Dr. Adam jointly.

In opening the appeal on behalf of Dr. Bond, the Attorney-General referred to the extreme importance of the case, judgment having been given against Dr. Bond for £25,000 on the ground of his alleged responsibility for the whole period of the plaintiff's detention, the important effect of which must be that no medical man would ever again certify a man whom he believed to be insane, if, that is to say, in the event of his being found to have been negligent, he was to be held responsible at law for all damages that flowed therefrom. The relevant evidence, counsel said, was that which showed the state of the plaintiff's mind on and about Dec. 14th, 1912, when he went to the office of the Commissioners in Lunacy. Going through the whole of the evidence as to the state of Mr. Harnett's mind, the Attorney-General dwelt upon the details of his visit to Dr. Bond, bringing with him a bag containing £30, and displaying it as an inducement to Dr. Bond to send with him at his expense an official to prevent his brothers and his wife from carrying out a plot against him. The effect of the judgment would be that doctors would decline to certify, and the country would be flooded with lunatics who ought to be in asylums. The grounds of appeal were (1) that the verdict was against the weight of evidence; (2) misdirection; (3) that the damages were excessive; (4) that the damages given were not recoverable as they were too "remote." The long detention of Mr. Harnett was not the direct consequence of the act of Dr. Bond, but followed upon a *novus actus interveniens*, consequently the £20,000 damages were "too remote," and, further, on the verdict of the jury, the judgment for £20,000 jointly against the two defendants could not stand, as the answers of the jury (see answers 1, 3, 13) negatived a joint liability. The relevant evidence showed the plaintiff to have been temporarily insane at the material time.

Mr. Harold Morris, K.C., following for Dr. Bond, read the judgment in the court below, and submitted that it was for the jury to determine what share each defendant took in the prolonging of the period of detention. Dr. Bond had taken no part in the matter after Dec. 14th, and had had judgment for £20,000 jointly entered against him.

Lord Justice Bankes observed that there was no verdict against Dr. Adam for £20,000, but one for £25,000; yet there had been judgment against him for £2000. The court had to decide which of alternative findings by the jury was right in law.

In the course of further argument Lord Justice Bankes called attention to answers (see 3 and 9) as to Dr. Adam's belief as to the plaintiff's condition, and, further, to the necessity for ascertaining whether there was evidence that Dr. Bond did not honestly believe the plaintiff to be of unsound mind. Cases cited as to the question of *novus actus interveniens* were Weld-Blundell *v.* Stephens (36 *Times* L.R., 640; [1920] A.C., 956); Ward *v.* Weeks (7 Bing., 211); Parkins *v.* Scott (1 H. and C., 153).

Sir Douglas Hogg, opening the case for Dr. Adam, submitted three points for consideration: (1) that the burden of proof that Dr. Adam acted without reasonable care lay on the plaintiff; (2) that in any case Dr. Adam had acted with reasonable care when he sent a motor-car for the plaintiff on Dec. 14th; (3) that Mr. Justice Lush ought to have told the jury that the criterion of reasonable care on the part of Dr. Adam was "what were the facts reasonably known to him when he received the telephone message from Dr. Bond?" He cited cases Williams *v.* Beaumont (10 *Times* L.R., 343); Shackleton *v.* Swift ([1913] 2 K.B., 304). He went on to say that it must be borne in mind that it was not an uncommon result of a patient being allowed to go out of an asylum on leave that he should have a relapse. It seemed to have been assumed also at the trial that once a patient was received in an asylum he never got out of it again. The jury was misdirected when told they might take into account events following on the drive back to Malling Place. Subsequent detention was due to the view formed by Dr. Adam after the patient was returned to his care. The only tort alleged against Dr. Adam was his having the plaintiff brought back to Malling Place, and there was no finding of the jury as to damages due in respect of that act.

Sir John Simon, opening the case for the respondent, Mr. Harnett, proposed to deal with it separately as against (1) Dr. Bond, (2) Dr. Adam. Certain alleged wrongful acts were done either in agreement between the two or in the alternative by one or other of them. The plaintiff's case was that he was sane on Dec. 14th, 1912. His mental illness was caused by an injection of tuberculin which had produced toxic insanity, but not a mental disease. His religious mania had passed, and he was cured by Dec. 12th when he left the home. It was an extraordinary coincidence that when he finally escaped he should then be admittedly sane. The act of imprisonment for which Dr. Bond was responsible went on until there was a *novus actus interveniens*. The probation order had created for the plaintiff the status of a free man until revoked, which it had never been; and when once the jury had found that the plaintiff's condition did not require his detention, it followed that his imprisonment by Dr. Bond extended beyond the time for which he was kept in the Commissioners' offices, so that the jury were entitled to award damages in respect of it. There was no *novus actus interveniens* and no defence to the action as far as Dr. Bond was concerned. As against him the jury could take into consideration at least the period up to November, 1913 (when the plaintiff left Malling Place).

Sir John Simon proceeded to argue that the whole of the procedure adopted by Dr. Adam under the probation order was wrong. He could not revoke it on receipt of a telephone message. Steps should have been taken to re-commit the plaintiff to the asylum under Sections 15 and 16[1] of the Lunacy Act, 1890, which, counsel contended, though primarily intended to apply to persons not before certified, were wide enough to cover the case of a patient on probation. There had been no independent medical testimony as to the plaintiff's condition as required by the Act, and no independent investigation before a judicial officer. Dr Adam's action constituted a trespass *ab initio*. He was not protected by Section 330 of the Lunacy Act, 1890, as the jury had found that he had acted without reasonable care. The onus was upon him to prove that he had acted with such care, and there was ample evidence to support the jury's finding. Sir John Simon laid stress on the evidence that Dr. Adam only saw the plaintiff a few hours after his return, and argued that the jury had to consider his conduct at the relevant time. Mr. Harnett had been found by the jury not to have been then insane, and there had been a joint tort at a certain period committed by the two defendants. There was no ground for construing the probation order as conferring upon them a power of arrest.

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[1] Sections 15 and 16 relate to the duties of constables, justices, and medical practitioners in connexion with the reception and detention in asylums of pauper and other lunatics "wandering at large."

Mr. J. B. Matthews, following on behalf of the appellant, Mr. Harnett, said that Dr. Adam had relied in his pleadings on Section 330 of the Lunacy Act, 1890,[2] but was not entitled to do so as he knew the Commissioner had no right to arrest, and that he himself had no right to send keepers to arrest, the plaintiff. A *novus actus interveniens* to be relied upon must be something coming from the outside, therefore what Dr. Adam did was not a *novus actus interveniens* so as to protect Dr. Bond, as they were joint tort feasors. Nor was Dr. Passmore, to whose care Mr. Harnett was consigned later, a *novus actus*, as the business had been "framed up" and Dr. Passmore's mind poisoned against the plaintiff.

Counsel relied upon Chamberlain *v.* King (L.R. 6 C.P. 474), Griffith *v.* Taylor (2 C.P.D. 194), Hermann *v.* Seneschal (13 C.B., N.S. 392).

Sir John Simon then submitted further that omission to discover the true condition of the plaintiff could not constitute a *novus actus interveniens;* that if the *novus actus* put forward was induced by the defendants' own action it would not protect them; there might be more than one cause of an act being done, and one such cause might be the conduct of the defendants. In that case, so far as the defendants were concerned, the *actus* would not be *novus.* Sir John Simon referred to Pollock on Torts, 12th edn., p. 240; Ratcliffe *v.* Evans [1892] 2 Q.B., p. 430 (a passage in a judgment by Lord Justice Bowen).

Mr. Harold Morris, replying on behalf of Dr. Adam, referred to Section 55[3] of the Act, and argued that in its true meaning it authorised the medical officer of an asylum to decide whether a patient, released on a probation order such as that under discussion, should be brought back. If that view was correct Dr. Adam was protected, and if he had committed no tort there could be no joint tort by him and Dr. Bond.

Sir Douglas Hogg, replying on behalf of Dr. Bond, contended that in the Lunacy Act, 1890, the words "take" and "retake" are used in contradistinction to "receive," and that they were used in the Act in such a way as to justify the course pursued in the case of the plaintiff. That course was adopted under sections contained in Part II. of the Act which was distinct from Part I., the latter providing for the care of lunatics at large and their certification, whereas Part II., containing Section 55, related to care and treatment after reception. Reports after reception were made by experts, and were not judicial inquiries such as were directed by Part I. The onus of proof of want of reasonable care, Sir Douglas Hogg contended (citing Williams *v.* Beaumont and Duke (10 *Times* L.R. 543)), was upon the plaintiff. There was no want of reasonable care on the part of Dr. Bond in the taking back of the plaintiff to Malling Place, or on the part of Dr. Adam in acting upon what was said to him by the Commissioner in Lunacy.

The arguments of counsel having been concluded, Lord Justice Bankes intimated that the Court would not deliver judgment until after the Easter vacation.

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[2] Section 330 protects from civil or criminal proceedings on the ground of "want of jurisdiction or any other ground" any person who has done anything in pursuance of the Act provided he acted "in good faith and with reasonable care."

[3] Section 55 relates to the "Absence on Trial for Health" of a patient and gives powers to the manager of a hospital, or licensed house, to permit absence on trial, subject to conditions which include the consent of a commissioner.

THE LATE DR. A. M. ADAMS.—Dr. Alexander Maxwell Adams, of Tibshelf, who died recently at the age of 60 years, was son of the late Mr. A. M. Adams, F.R.C.S.E., of Friarsfield, Lanark, and belonged to a well-known medical family in Scotland. Dr. Adams was educated at Lanark Grammar School and at Edinburgh University, where he graduated M.B., C.M. in 1884. His first post was that of sub-curator in the Pathological Museum of Victoria University, Manchester, after which he had some experience of general practice in Scotland. Later he became Protectorate Surgeon in Gambia, West Africa, and engaged in research work on sleeping sickness, publishing the results of his investigations in 1903, when their merit was recognised by a diploma of the First Class bestowed on him by the University of Palermo, Italy.

Correspondence.

"Audi alteram partem."

THROMBOSIS, PULMONARY AND ELSEWHERE.

To the Editor of THE LANCET.

SIR,—We must all have read with much interest the full discussion on pulmonary thrombosis, embolism, and allied conditions, held at Liverpool on March 14th and reported by you on April 12th.

Concerning the clinical distinction between pulmonary thrombosis and embolism, I think there is rarely, if ever, any difficulty. An embolism always (?) causes instant distress, panting, dyspnœa, and often hæmoptysis. Thrombosis, rapid as it may be, is gradual. A case which I witnessed a few years ago may be worth recording.

I was asked by a colleague to see with him a case of acute pneumonia in a man of middle age. It was a case of some severity, and we met two or three times until crisis having occurred normally I took my leave with words of congratulation to the patient and his friend. It was in a humorous spirit that, on bidding my medical friend good-bye, I said you will have no more need of me unless the patient gets a clot in his pulmonary artery. A day or two later (I have no notes, unfortunately) my colleague telephoned to me that all seemed well but that the patient "felt bad." On further inquiry I was told that the pulse was 82, the respirations easy, and the temperatures normal. This seemed so reassuring that I replied that I hoped no more was the matter than a reaction from severe illness. However, in a day or two again my friend telephoned that the symptoms were still as before, but that the patient still said that he "felt bad." I was not definitely requested to visit the patient again (he lived some distance away), and on the record given I hoped he would soon recover his strength and spirits. In another day or two the telephone gave the same message. The patient still "feels bad," please come over at once.

On my arrival one saw at once he *was* "bad." He was sitting up in bed, not panting, but distressed, a little ashen in colour, and he had the appealing look of a man in dread. Still temperature normal, respirations not obviously hurried—say 18 to 20—pulse of excellent quality—82—and heart-sounds normal. Nothing definitely abnormal to be heard in the lungs. An invalid diet was taken as usual. There was no doubt about the diagnosis of thrombosis. Carbonate of ammonia was pressed in doses as large as possible, but no hope of recovery could be given. For about two days more the patient remained much the same—no worse; then as the nurse was counting the pulse—it was still 80 and quite regular—he turned suddenly over and died, the pulse stopping on the instant under her finger. The autopsy went no farther than to reveal a dense pale clot in the pulmonary artery. During its formation the patient must have lived at least seven or eight days; while the only tell-tale was his aspect, which was unmistakable. It was something like that of angina, but there was no pain.

May I now say a few words on thrombosis of the limbs in infections and septic conditions? In ordinary practice nowadays we see little of the infectious fevers, but I am thinking of days, not very long ago, when typhoid fever was frequent, and further back to a time when I had entire charge of the Leeds Fever Hospital. Thrombosis of the veins of the legs was no rare accident, less frequently of an arm; sometimes we had to deal with the far more grievous event of thrombosis in the popliteal or femoral artery. These accidents were events of convalescence, especially of the early stage of it. Now one of the first reliefs to which such a patient looks forward is to turn, or be turned, to lie upon his side, or at least to lift one leg over the other, or to turn so as to lie upon an arm. Thereupon pressure falls on a blood-vessel, slows its current, and a clot may ensue. Then and since I have given strict orders to nurses to shift such patients, or to let them shift themselves only with very careful precautions, such as the insertion of a soft pillow between the legs, and the like. By these means thrombosis of the limbs could always be prevented. As I have never seen this point of practice mentioned in any book or essay, I have ventured to quote my own experience.

We used to read of thrombosis of the cerebral sinuses in chlorosis; I say "used to," because for some unexplained reason chlorosis is a disappearing malady. I remember one case only of this thrombosis. I was called by a medical friend to a large Yorkshire house in consultation on a young woman in chlorosis —a "classical" case. Our opinion, both as to prognosis and cure, was hopeful and confident. Two days later the patient died, almost suddenly, of encephalic thrombosis—a mishap which was not placed to the credit either of my colleague or of myself. I think these cases were very rarely seen at any period of history.

I am, Sir, yours faithfully,

Cambridge, April 15th, 1924. CLIFFORD ALLBUTT.

MALTA FEVER AND EPIZOÖTIC ABORTION.

To the Editor of THE LANCET.

SIR,—In an annotation on this subject, which appeared in THE LANCET of Feb. 9th (p. 297), reference is made to the similarity between the causal organisms of these diseases and to the fact that in America a case of Malta fever has been identified in a patient who "had never been abroad, nor for a long time outside the city of Baltimore, and had had no contact with goats," and from whom a strain had been isolated belonging to the abortus subspecies. It is stated in your annotation that "we have here, then, apparently *for the first time*, an example of variation in the pathogenic relations of this organism." (The italics are mine.) I venture to draw your attention, therefore, to a paper [1] entitled Infectious Abortion of Cattle and its Possible Relation to Human Health, which I read before the Southern Rhodesia Veterinary Association on Nov. 12th, 1921, and which terminated with the following summary of conclusions:—

1. The disease known as infectious abortion of cattle, which exists in Southern Rhodesia, is caused by the *B. abortus* of Bang, and serological tests indicate that it is identical with the specific abortion of cattle in other parts of the world.

2. The *B. abortus* of Bang bears a close morphological and biological resemblance to the *M. melitensis*. Serological tests also indicate a close affinity, in that certain strains of *M. melitensis* can be agglutinated with serum from cattle infected with infectious abortion, and strains of *B. abortus* can also be agglutinated by serum from human patients suffering from undulant fever.

3. The characteristic symptom of undulant fever in goats and sheep is abortion.

4. Certain cases presenting symptoms resembling undulant fever have occurred in Southern Rhodesia in men who, as far as is known, have not obtained infection from goats, but have resided on farms where animals are, or have been, infected with infectious abortion.

5. It is suggested that these cases are suffering from an infection caused by the *B. abortus* of cattle.

6. It is also suggested that human females may contract infectious abortion through the ingestion of the organism in milk and dairy products from infected cows.

7. Although infectious abortion is prevalent in other parts of the world where goats' milk is not used for human consumption, it has not been accused of causing the symptoms of undulant fever in man, nor has it been proved to cause abortion in human subjects.

8. Although infectious abortion has prevailed in the Marandellas district for many years, it is only within the last few months that cases resembling undulant fever in man have been recorded.

9. While circumstantial evidence points to the infection of man by the *B. abortus* of Bang, and scientific tests up to a point support this suspicion, the final proof is not yet available.

10. If infectious abortion is essentially a bovine disease, a grave responsibility attaches to the Veterinary Department, and if this disease is communicable to man, a hearty coöperation between the medical and veterinary professions is necessary in dealing with it.

Since this article was written cases have continued to occur in this country under similar circumstances, but, strange to say, it generally happens that only one member of the family becomes infected—sometimes the husband, sometimes the wife, and occasionally a child or a visitor. In one instance it was the unfortunate mother-in-law who, during a short visit, contracted the disease, while the other members of the family remained healthy. Such circumstances do not point to infection through the milk, but no explanation is at present forthcoming as to why certain individuals are susceptible or how the infection of cattle can become virulent to man.

Although from recent literature on the subject it would appear that veterinary authorities do not consider the danger a real one, I would suggest that if members of the medical profession would apply the agglutination test to the blood of those suffering from the obscure pyrexias referred to in the annotation, or of their female patients suffering from sterility or abortion, evidence might be obtained that epizoötic abortion of cattle is another of the numerous diseases of animals communicable to man; and far more dangerous than is generally believed.

I am, Sir, yours faithfully,

LE E. W. BEVAN,
Director of Veterinary Research, Southern Rhodesia, S.A.
March 20th, 1924.

*** In *Public Health Reports* for March 14th, 1924, appears an interesting survey of what is known of human infections with *B. abortus*, by Miss A. C. Evans. There seems to be no doubt that such occur, partly as illnesses resembling Malta fever, more frequently as unrecognised infections leaving serological evidence in the form of specific agglutination. Many people are exposed to infection through drinking raw cows' milk in which the organism of contagious abortion is not uncommon.—ED. L.

DOCTORS AND ADVERTISING.

To the Editor of THE LANCET.

SIR,—In your issue of March 29th Dr. Harold Spence agrees with the suggestion I made in a letter appearing in your columns on March 1st, that the public have no easy and reliable method of obtaining information regarding specialists in venereal disease, that consequently they are liable to fall into the hands of pseudo-specialists, and that a register of specialists under the various diseases or branches of medicine—giving details of work and record on which such special experience is based—is desirable. I made no suggestion regarding *selection* of names of persons qualified to "style himself a specialist," and certainly did not suggest that "only those who maintain a hospital connexion are eligible to be described as specialists."

I cannot agree with Dr. Spence that it would be right or proper for the General Medical Council to decide who was or was not entitled to call himself or herself a specialist in any disease. All I suggested was that an easily accessible register should be drawn up containing the names of *all* medical practitioners practising in special branches of their profession, together with full details of their work and experience in these particular fields. The public would then be in a position to judge for itself, and would have sufficient data to enable it to select the professional help it required.

I am, Sir, yours faithfully,

H. WANSEY BAYLY.

Harley-street, W., April 19th, 1924.

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[1] Reproduced in the Transactions of the Royal Society of Tropical Medicine and Hygiene, Jan. 19th, 1922.

INSULIN BY THE SKIN AND MOUTH.

To the Editor of THE LANCET.

SIR,—Major H. H. King will find in THE LANCET of Oct. 6th, 1923 (p. 777), that a negative result was obtained by my colleagues and myself after administering insulin per rectum in a case of diabetes. The necessary control experiments were carried out.

I am, Sir, yours faithfully,
London, W., April 15th, 1924. E. P. POULTON.

CERTIFICATES OF INSANITY.

To the Editor of THE LANCET.

SIR,—I share with Dr. Suttie the view that it may be sought to enact that certificates shall be shown to patients under care and treatment in virtue of such documents. This view is based, so far as I am concerned, firstly on one of the suggestions contained in a letter by a critic of lunacy administration to *The Times* of March 17th, which I ventured to examine in your issue of March 29th; and, secondly, upon a legal attitude disclosed in the recent trial before Mr. Justice Lush, from which it appeared that it was regarded as surprising and even monstrous that certificates were not as a matter of course shown to patients. My submission is that in many cases to do so would be futile and in others injurious, but my objection to a general enactment that certificates should be shown to patients does not commit me to the opinion that there are no cases in which they might be shown.

I am, Sir, yours faithfully,
E. D. MACNAMARA.
Harley-street, W., April 15th, 1924.

THE WASSERMANN REACTION IN DIAGNOSIS.

To the Editor of THE LANCET.

SIR,—The recent correspondence in these columns by Dr. J. N. Cruickshank and Mr. H. Wansey Bayly shows how important it is that the true diagnostic value of the Wassermann reaction (W.R.) should be definitely ascertained. The crux of the whole matter would appear to lie in the rightness or wrongness of Mr. Bayly's statement that "it is now . . . established that a positive reaction does not necessarily mean that the individual is syphilitic." Dr. Cruickshank is of the opinion that, so far as the new-born infant is concerned, the test is of no value whatever. On the other side, is Dr. L. W. Harrison's view that "provided that the test is carried out according to the principles of the original method, a definitely positive result indicates that the person is suffering from syphilis." He, however, enumerates some 15 non-syphilitic conditions in which positive results have been reported as occurring, and he indicates that these may be possible exceptions.

In considering these positive reports from non-syphilitic patients, two factors must be taken into account: (1) The technique by which the test was performed, and (2) the certainty with which syphilis could be ruled out in the person from whom the blood was taken. The first is of the utmost importance; and a survey of the literature on this matter for the last decade demonstrates clearly that as technique has improved the number of reports of non-specific reactions has markedly decreased. At the present day one is inclined to regard such reports as either an indication of faulty technique, or that the person from whom the serum was obtained was suffering from endosyphilis. Malaria, for example, is alleged to be capable of giving a positive W.R. In McConnell's case of malaria which ended fatally[1] the patient's blood during life gave a positive result, although clinical signs and a history of syphilis were absent. At the autopsy, however, very definite syphilitic lesions were found in the aorta. Had a post-mortem not been done, and had the diagnosis of syphilis not been made microscopically, this case would undoubtedly have taken its place among those quoted in support of the statement that malaria can produce a positive W.R.

A considerable proportion of syphilitics present no clinical signs whatever, and may even show a negative serological picture until the application of certain stimuli—e.g., iodides, a provocative injection of arsenobenzol, pregnancy, or some febrile disease. If clinical signs of the disease cannot be demonstrated, if a syphilitic history is unobtainable (and a negative history is valueless), and if a positive W.R. is not accepted, then the only way in which syphilis can be diagnosed or eliminated is by a histological examination of the wall of the left ventricle, the aorta, the testicles, pancreas, and suprarenal capsules. The post-mortem diagnosis of syphilis depends upon finding the specific histological mild inflammatory picture, consisting of lymphocyte and plasma-cell infiltrations in the stroma surrounding the blood and lymphatic vessels, particularly in the organs and tissues indicated. Strictly speaking, therefore, in no case of alleged non-specific positive W.R. can syphilis be eliminated unless it has come to the post-mortem table and proved negative on microscopic examination. Warthin[2] holds that a positive W.R. indicates syphilis except in a few rare cases of generalised malignant disease, and he finds that this view is confirmed by post-mortem findings.

The diagnosis of post-mortem syphilis which rests upon the gumma is obsolete. The histological picture of syphilis is specific, and it is due to the local action of the *Treponema pallidum* which has undergone some regression in virulence. The stimulus of iodides, arsenobenzol, or malaria is capable of rejuvenating these organisms, of enhancing their virulence, and thus producing a positive W.R. in the blood. Marcialis[3] gives the results of an investigation of the Wassermann and Sachs-Georgi reactions in 225 cases of malaria. Only 2·2 per cent. gave positive results which might possibly be attributed to malaria on the grounds that there were neither clinical signs nor any history of syphilis. But these, since they did not come to necropsy, cannot, in view of the experience of Warthin and of McConnell, be definitely declared to be non-syphilitic.

The disappearance of a positive W.R. in an infant soon after birth is, of course, a common observation even without anti-specific treatment, and it only means that the condition of endosyphilis has occurred. The practical danger of it is that the unwary may be tempted to cease treatment, or to refrain from commencing it, under the impression that the child is not syphilitic. Such an infant may present none of the usual stigmata until the occurrence of, say, interstitial keratitis after puberty. It is an appreciation of this which impels one to the view that, no matter what may be the serological condition at any time after birth, the anti-syphilitic treatment of a child born with a positive W.R. must extend at least till adolescence. The only sure criterion of cure in syphilis is that the individual again acquires a primary chancre. The only real evidence of the absence of syphilis is the failure to find the specific histological appearances after death. These tests are of little use to the living patient, so that practically we are left with the W.R.

There can be no doubt but that clinical experience and pathological investigation show that there is no more specific test in medicine than the W.R., and that the margin of error is less than 0·3 per cent. As syphilis does exist without clinical signs, there can be no avoiding the conclusion that at the very least the presence of a positive W.R. entitles the patient to the benefit of the doubt, and the expression of that is the institution of prolonged anti-syphilitic treatment.

I am, Sir, yours faithfully,
Manchester, April 18th, 1924. E. T. BURKE.

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[1] Jour. Amer. Med. Assn., 1923, lxxx., 1123.

[2] Amer. Jour. Syph., vol. ii., No. 3, 1918.

[3] Gazzetta degli Ospedali e delle Cliniche, Jan. 27th, 1924.

SCHICK IMMUNISATION IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—When the Schick test and immunisation against diphtheria is being discussed, attention is concentrated on its use to prevent diphtheria among school-children or adults such as nurses in fever hospitals. Might I be allowed to point out the extreme importance of the test and immunisation being carried out for very young children, such as those attending infant welfare centres? In London 52·6 per cent. of the 2846 deaths occurring from diphtheria in the three years 1919–21 took place in children under five years of age.

I am, Sir, yours faithfully,
C. W. HUTT, M.D.,
Medical Officer of Health, Metropolitan Borough of Holborn.
April 17th, 1924.

ELECTRIC LIGHTING AND EYESTRAIN.

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 19th, 1921, you published part of my introduction to a discussion at the Royal Society of Arts dealing with Kinematographic Illumination and Eyestrain; it has occurred to me that there may be some connexion between alternating current lighting and eyestrain, which probably accounts for some preferring a type of lighting other than electric; whereas, with direct current lighting the discomfort is apparently non-existent. In my own case, I find it is far more comfortable for my eyesight when working under direct current lighting in my office as compared with alternating current lighting in my private residence.

It would be interesting to hear the experience of surgeons when conducting delicate operations under these two different conditions—alternating *v.* direct—as with alternating it is possible to detect several images of bright metallic instruments especially when these are in motion, similar to "cinematograph" action. This "cinematograph" effect is most pronounced in the low-wattage "Neon" night-light bulbs when used on an alternating current circuit. Perhaps ophthalmic surgeons could throw some light on the apparent increase in the use of spectacles in certain areas.—I am, Sir, yours faithfully,

J. C. ELVY, A.M.I.E.E., M.I.E.S.,
Consulting Engineer.
12, Tavistock-street, Strand, W.C. 2, April 10th, 1924.

⁂ With an alternating current, an arc lamp or a "Neon" lamp goes out every time the current reverses, but very few people work by the light of such lamps. With incandescent electric lamps, on a circuit with less than 25 alternations per second, there is a perceptible flicker in the light which undoubtedly is trying to the eyes. We understand that while there are 25 cycle plants operating on power loads which also supply lighting, there is no authority supplying alternating current at less than 50 alternations per second for lighting. But even at this speed there may be a slight cyclic variation in the light, especially from the low-power high-voltage metal filament incandescent lamp, in which the mass of the filament and therefore the stored heat energy is very low. The point is one which ophthalmic surgeons might consider.—ED. L.

MASSIVE DOSES OF DIGITALIS IN AURICULAR FAILURE.

To the Editor of THE LANCET.

SIR,—Dr. J. Jensen's short paper on this subject, published in your issue of April 12th, should serve to draw attention to a really valuable and even life-saving measure. Since the work by Eggleston and his colleagues, to which Dr. Jensen refers, showed that these large doses were safe, I have been in the habit of using a modification of their method very similar to that described by Dr. Jensen. The plan turns on the capacity of the average adult patient with auricular failure to take 3 drachms of the tincture of digitalis in the first 24 hours of treatment, if the symptoms are urgent enough to call for drastic means of relief. Dr. C. E. K. Herapath and I, in a paper on auricular failure read at a recent meeting of the Bristol Medico-Chirurgical Society, gave some account of our experiences of this plan. We have never seen any ill-effect from these large doses, while, on the other hand, we have known lives saved which would have been lost unless this plan had been followed.—I am, Sir, yours faithfully,

Clifton, Bristol, April 14th, 1924. CAREY F. COOMBS.

A CRITICAL EXAMINATION OF PSYCHO-ANALYSIS.

To the Editor of THE LANCET.

SIR,—I have read Dr. R. M. Riggall's letter to THE LANCET of April 5th. Before entering upon a controversy Dr. Riggall ought, above all, to make himself acquainted with the facts.

On p. 189 of my book I said: ". . . the facts upon which Janet's and Breuer's methods are based are, I believe, beyond dispute, but I am not concerned here with their theories. They have, however, little in common with Freud's psycho-analytic method, which was modelled upon Breuer's cathartic method. Neither am I concerned here with the dangers that arise from the bringing back into consciousness of old-forgotten memories, as is done in the cathartic method, and I shall therefore not dilate upon this subject. Suffice it to say that some authorities have pronounced themselves against this method in no equivocal manner."

Your reviewer remarked upon this that I had given no reference for the terminating statement and I therefore mentioned in my letter to THE LANCET Binswanger, whose work on hysteria was and remains a standard work on the subject. I might have given many more names, English, German, or French if I had troubled to look up references, but I thought one recognised authority would be more effective than a long string of names of lesser lights. From the above quotation it is perfectly clear that I do not take sides with reference to "abreaction" (which, by the way, was not Freud's idea, but Breuer's) and concerning this question I would direct Dr. Riggall's attention to the symposium on "The Revival of Emotional Memories and it Therapeutic Value" in the *British Journal of Psychology*, Medical Section, 1921, vol. i., pp. 16–33.

It is further evident from the above quotations that this point does not affect the main thesis of my book. I endeavoured to show that the very foundations of the psycho-analytic doctrine and its means of penetrating the "unconscious" are unscientific and fallacious, and in this I have apparently been successful, for psycho-analysts never join issue upon this main thesis, but invariably try to side-track the discussion upon unessential details.

I am, Sir, yours faithfully,
Shortlands, Kent. A. WOHLGEMUTH.

THE CENTENARY OF FRIEDRICH WILHELM BENEKE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of April 12th, p. 781, it is stated that Prof. Beneke, the centenary of whose birth has just been celebrated at Bad Nauheim, was for several years chief physician to the German Hospital in London. This is not quite correct. He was house physician at the hospital from January, 1849, to the summer or autumn of 1851, and then practised his profession in Hanover. He afterwards became professor at the University of Marburg, and also took a great part in the development of Bad Nauheim. He died in December, 1882. My father succeeded him in 1851 as house physician to the German Hospital in London.

I am, Sir, yours faithfully,
London, W., April 14th, 1924. F. PARKES WEBER.

Obituary.

RICHARD JAMES REECE, C.B., M.D. Camb.,

SENIOR MEDICAL OFFICER, MINISTRY OF HEALTH.

We deeply regret to announce the sudden death on Easter Sunday of Surgeon-Colonel R. J. Reece, which occurred in his sixty-first year, at his country house, Basketts, Birchington.

Dr. Reece was born in Kensington and educated at the Kensington School, St. Bartholomew's Hospital, and Downing College, Cambridge, whence he graduated as M.B. in 1892, later proceeding to the M.R.C.P. Lond. and the Cambridge doctorate. He was also one of the earliest holders of the D.P.H. of the Conjoint Board. He held the resident surgical posts at St. Bartholomew's Hospital, being also ophthalmic house-surgeon, and quite early in his career published some interesting clinical notes both in these columns and in the St. Bartholomew's Hospital Reports. He joined the medical staff of the Local Government Board in 1892, under Sir Richard Thorne Thorne, and from that time onwards his admirable epidemiological and sanitary work has been at the disposal of the Government, first at the Board and later at the Ministry of Health, where at the time of his death he was senior medical officer. As medical inspector of the Local Government Board he was the author of many valuable reports on small-pox, cholera, enteric fever, cerebro-spinal fever, and acute poliomyelitis, while past experience in the service of the City and Port of London indicated the consignment to him of many administrative questions in connexion with the work of port sanitary authorities. His intensive study of the outbreak of epidemic poliomyelitis, which occurred in Cornwall and Devon 12 years ago, brought his name prominently to the front as a scientific observer of the highest class, as well as an administrator of courage and firmness. The outbreak occurred in the neighbourhood of Holsworthy in August, 1911, when the medical officer of health, Dr. W. G. Gray, recognised that certain cases of so-called "spotted fever" were occurring over a wide area but attracting very little attention, and when the initial neglect enabled the disease to spread from Bude on the west to Hartland, Swimbridge, South Molton, and eventually Tavistock, Dr. Reece was sent down by the Local Government Board to make a special investigation, and, owing to his pressure, the Holsworthy Urban Council realised the necessity for taking efficient measures. At first the council declined to provide for the isolation of cases—and there was difficulty in the accommodation of these—but Reece attended one of the sessions of the Council and informed the members that an infectious disease "that killed people" was at their doors, and that there were probably 30 cases at the moment inside their own district, while infection had extended to other districts in the neighbourhood.

When the war broke out Reece almost immediately received an appointment on the headquarters staff of the Army Medical Service, for he had been since boyhood a member of the H.A.C., giving him the official right to the now rare designation of Surgeon-Colonel. His work during the war in the administration of preventive services in regard to infectious diseases was remarkably thorough, particularly in regard to cerebro-spinal fever, which in the second and third year of the war was prevalent in various parts of the country. His accurate knowledge here was of particular value, because the disease was one of which we had little previous experience, and it proved so variable in its manifestations that mistakes in diagnosis were constantly being made. In a paper communicated to The Lancet in March, 1917, Reece published, at the request of the Medical Research Committee, a series of notes on five cases which were primarily thought to be cerebro-spinal fever, but which proved ultimately to be acute anthrax. Confusion in the detection of cerebro-spinal fever, as apart from acute poliomyelitis, tuberculous meningitis, influenza, typhoid, and rheumatic fevers had undoubtedly often arisen, but anthrax as a further difficulty in diagnosis had not previously been observed, and these notes were a valuable contribution to clinical medicine. His knowledge of small-pox and vaccination questions was profound, and in recent years the present system of control over small-pox in England was directed by him and by the medical officers in his section at the Ministry of Health. This, like all his other work, he undertook with untiring industry, with a high sense of duty, and with pride in his department. Reece's position as an epidemiologist and sanitarian was recognised by his election and re-election to preside over the Epidemiological Section of the Royal Society of Medicine; he was vice-president of the Public Health Section of the British Medical Association at the important Glasgow meeting in 1922, and had examined in State Medicine at his old University. He received the C.B. (Mil.) for his services during the war.

Surgeon-Colonel Reece's sudden death will be felt by a large circle of personal, official, and professional friends, by whom he was both admired and respected for his attainments and social qualities.

HUGH WALSHAM, M.D. Camb., F.R.C.P. Lond.

Dr. Hugh Walsham, consulting radiologist to St. Bartholomew's Hospital, who died in London on April 13th, was a pioneer worker in medical radiology. Born in 1856, the second son of William Walker Walsham, of Wisbech, Cambridgeshire—his elder brother being the surgeon, Mr. W. J. Walsham, who died in 1903—Hugh began his education at King's College, London, proceeding to Caius College, Cambridge, where he graduated in medicine and surgery in 1887. His medical student days were spent at St. Bartholomew's Hospital. In the City of London Hospital for Diseases of the Chest he obtained the post of pathologist in 1894, and two years later he was appointed physician to the out-patient department of the hospital. The same year he was also appointed assistant medical officer to the electrical department of St. Bartholomew's Hospital. Profiting by his experience at these two hospitals, he was one of the first to realise the uses to which X rays might be put in investigation of diseases of the chest. By examining patients clinically and radiologically and by making X ray pictures of the cadaver in cases which came to autopsy he was able to correlate clinical and radiological findings. The book which he wrote, under a joint authorship with Dr. Harrison Orton ("The Röntgen Rays in the Diagnosis of Diseases of the Chest," published in 1906), was the first on the subject to appear, and may be regarded as the original classic. His essay on the Channels of Infection in Pulmonary Tuberculosis had gained the Weber Parkes Prize three years earlier.

Walsham was chief assistant in the electrical department of St. Bartholomew's Hospital when the late Dr. Lewis Jones was medical officer in charge. He conducted all the radiological work of the department while Lewis Jones devoted his time to the study and practice of electro-therapeutic work. In 1912, the year after the retirement of Lewis Jones, radiology was made the work of a new department and separated from the original electrical department, and Walsham was elected medical officer in charge and lecturer on radiology. "Before he retired from active work at the hospital," one of his colleagues writes, "Walsham was a familiar figure in the X ray room. Always bright and cheery, he was ever ready to assist those in need of help in the interpretation of radiograms. Although his work became more arduous year by year—two rooms only were allotted for the X ray work of the entire hospital—he would always spare time to those who sought his help. During the last months in which he was in charge of the X ray department he was frequently absent on account of ill-health, which eventually compelled him to retire. During the latter years of his life

Walsham kept aloof from medical meetings, and it is probable that the majority of the younger radiologists never even saw him."

On his retirement from the department Dr. Walsham was appointed consulting radiologist to St. Bartholomew's Hospital. Relieved from routine hospital duties, he continued private work until the illness which terminated his life. Like other pioneer workers in radiology, Dr. Walsham was the victim of X ray burns and had lost several of his fingers. His own experience led him to hold the view strongly that medical officers and nurses should only be attached to X ray departments for limited periods.

RICHARD HINGSTON FOX, M.R.C.S. ENG., M.D. BRUX., F.R.C.P. LOND.

Dr. Hingston Fox, whose death took place at Jordans Village, Beaconsfield, after a short illness on April 20th, came of Quaker medical stock, being descended from a line of doctors practising in the West Country. Born at Stoke Newington in 1853, he was the third of six surviving sons of Joseph John Fox, surgeon, all of whom followed the family tradition and entered the medical profession. From an early age Fox Tertius became a companion and helper to his father. His medical course was taken at the London Hospital, where he won scholarships in scientific subjects and whence he qualified M.R.C.S. and L.S.A. in 1874. Ten years later he took the M.D. Brux. and the M.R.C.P. Lond. His Fellowship was conferred upon him the year before his death.

After qualification Dr. Hingston Fox was for a number of years in general practice at Finsbury Park, at the same time steadily acquiring a city connexion in Finsbury-square. Like some other physicians who have not been closely attached to hospitals he made a study of life assurance, and more than 40 years ago was appointed medical officer in London to the Friends' Provident Institution, an appointment which he held to the end of his life. His statistical bent and philosophic outlook fitted him well for this class of work, and he was one of the first to take a broad view of adolescent albuminuria. At the Assurance Medical Society, of which he was one of the original members, his contributions were frequent and welcome; he was for many years its foreign correspondent and was elected to the presidential chair. At the Hunterian Society he held in succession all the chief offices, and his oration on the life of William Hunter was published later in book form. At the time of his death he was just completing the centenary history of the Society. Medical history always occupied much of his time and thoughts. In 1919 appeared "Dr. John Fothergill and his Friends" (Macmillan), in which the facts and references were compiled with such care as to make the book an intimate picture of medical and social life in the eighteenth century. In his own words, this work was intended as a reminder "of what our fathers were thinking and doing in times of strain and battle and loss, albeit on a lesser scale than ours," and he hoped that it might help some to meet the age-long questions that beset the lot of humanity.

In 1902 Dr. Fox gave up general practice and moved to Gordon-square. A few years later his health, never very robust, led to the surrender of his city practice, and he took rooms in the Harley-street district, where he enjoyed a considerable general consulting practice, living in succession at Hampstead, Golders Green, and Jordans Village. On the transfer of the Friends' Provident Institution to London he became its chief medical officer. He was also medical examiner for the U.K. Provident Institution, hon. physician to St. Luke's Provident Dispensary, and, during the war, assistant physician to Mount Vernon Hospital for Consumption.

To his acquaintances Dr. Fox appeared cautious, retired, unassuming, deliberate of speech, and wise in judgment; his friends knew that behind his manner of reserve lay warm feelings and a quick insight. Outside his profession his personal interests were catholic. His knowledge of botany, geology, and ornithology was unusually complete. Bible study was only second with him to medical study; his shelves were full of Latin, Greek, Hebrew, and Persian volumes, and he welcomed the higher criticism as an aid to reverent knowledge. He was no mere acquirer of facts, but sought to integrate and re-interpret them, writing his own translations of Hebrew and Greek texts. Never idle for a moment, his poor health seemed to limit but little his mental output. In his early manhood he was threatened with phthisis, but his health was then restored by voyaging to the Antipodes as ship's surgeon. Later in life he suffered from disabling attacks of Ménière's disease, but at these times continued to read and write on his couch. His death was due to an acute attack of intestinal obstruction.

Dr. Fox married in 1879 Elizabeth, daughter of the late Charles Tylor, and had seven children, all of whom survive him. His only son, Dr. J. Tylor Fox, is medical superintendent of the Lingfield Epileptic Colony.

ALBERT EDWARD MORISON, M.B., C.M. EDIN., F.R.C.S. EDIN., M.R.C.S. ENG.

Mr. A. E. Morison, hon. surgeon to the Sunderland Royal Infirmary, died suddenly at his own house, St. George's-square, Sunderland, on April 9th, at the conclusion of his consulting hour. He was 61 years of age. Mr. Morison was educated at King William's College, Isle of Man, and he graduated in medicine and surgery at the University of Edinburgh in 1884, taking his M.R.C.S. Eng. in 1886 and F.R.C.S. Edin. in 1889. He joined his brother, Dr. James Rutherford Morison (afterwards professor of surgery in Durham University), in partnership at Hartlepool in 1884 and took over the practice when his brother moved to Newcastle. About 16 years ago Mr. Morison went to commence consulting practice in Sunderland and later to live in that town, at the same time maintaining the closest connexion with the Hartlepools. During the whole of his life he was actively associated with Hartlepool Hospital, and at the time of his death was the senior and an active member of its staff. He was following most keenly the schemes for hospital development at present engaging the attention of the management of that institution. On his coming to Sunderland he became associated with the Sunderland Royal Infirmary and Children's Hospital. He was appointed honorary assistant surgeon in 1909, and honorary surgeon five years later. He retired in accordance with the age rule and was appointed honorary consulting surgeon in 1922. He was chairman of the nursing committee 1920–22, and took the keenest interest in the nursing question and did much to raise the standard of efficiency. During his association with the Royal Infirmary he had a great deal to do with the organisation of workmen's contributions.

Mr. Morison took part in the Boer War in South Africa, and during the late war, with the rank of major in the Royal Army Medical Corps, he served overseas for certain periods. He was especially identified with the Northumberland War Hospital, the Sunderland War Hospital, and the Hamerton House V.A.D. Hospital in Sunderland. A feature of his work being his skill in bone surgery, he was appointed surgeon specialist in head injuries to the Northern Command. After the war he became surgeon to the Sunderland Pensions Hospital. He was always keenly interested in medical politics and presided at different times over the Northumberland and Durham Medical Society and the North of England branch of the British Medical Association.

About two years ago Mr. Morison's health gave rise to anxiety and he took a long holiday; this, characteristically, he spent in visiting America, where he studied the hospital work of that country, giving valuable communications on the subject when he returned. His professional life was a very full one. He was a surgeon of great skill and natural genius, but the outstanding feature of his life was his work for the youth of Hartlepool—this town was the first (in England) to undertake a Boys' Brigade, and Mr. Morison threw himself heart and soul into the work from the beginning. Dr. "Bertie," as he was affectionately called, was Captain, 1st Hartlepool Company Boys' Brigade for many years. He also initiated and was president of the Hartlepool Old Boys' Institute, which dealt with those boys who had passed through the Brigade and had reached the age limit.

A funeral service was held in Christ Church, Sunderland, on Saturday, April 12th, when there was a large attendance, many of the doctors of Sunderland being present and also representatives of many local activities. After the service the body was conveyed by motor to Hartlepool, where another service was held at St. Hilda's Church. The scene in Hartlepool was most remarkable and impressive, practically the whole town attending the funeral and paying a last tribute to one who had been the devoted friend of the boyhood and youth of Hartlepool for 37 years.

In 1896 Mr. Morison married Miss Harriet Appleby, eldest daughter of the late Mr. Thomas Appleby, J.P. He leaves a widow, a son, and two daughters.

Medical News.

UNIVERSITY OF LONDON.—An advanced lecture in ophthalmology on Accommodation will be given at the Charing Cross Hospital Medical School, Chandos-street, W.C. 2, by Dr. J. Van Der Hoeve, professor of ophthalmology in the University of Leiden, at 5 P.M., on Friday, May 9th. The chair will be taken by Mr. E. Treacher Collins. The lecture will be delivered in English and illustrated by lantern slides. Admission is free.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The Oliver-Sharpey lectures will be delivered by Prof. A. V. Hill on Tuesday, April 29th, and Thursday, May 1st, at 5 o'clock. The subjects will be: (1) The Recovery Process in Isolated Muscle, and (2) the Recovery Process in Man. On Monday, May 5th, at 5 o'clock, Dr. Karl F. Wenckebach, professor of medical pathology and therapeutics, and director of the First Medical Clinic, Vienna, will deliver a lecture on Angina Pectoris and the Possibilities of its Surgical Relief.

An extraordinary Comitia of the Royal College of Physicians of London was held on Monday, April 14th, at 5 P.M., the President, Sir Humphry Rolleston, Bart., being in the chair. The President delivered the annual address and pointed out that there were now 371 Fellows, compared with 87 a hundred years ago. The roll of the College now showed 636 Members and 14,902 licentiates. He referred to the death of the late Bedell, Mr. William Fleming, who had served the College for more than 50 years, 31 years as Bedell. He read obituary notices of the 12 Fellows deceased during the past year—namely, Dr. A. C. Latham, Sir James Reid, Dr. G. E. Rennie, Dr. P. W. Latham, Dr. P. W. Saunders, Prof. D. W. Finlay, Dr. Thomas Henry Green, Dr. Lauriston E. Shaw, Dr. Thomas W. Thursfield, Dr. Donald W. C. Hood, Dr. W. A. Wills, and Dr. Alexander Haig. Sir Humphry Rolleston was then re-elected President by 67 votes out of 69. Reports were received from the Committee of Management as follows:—

The Committee of Management recommend that Clause 3, Section II., of the regulations relating to the pre-medical examination which is as follows:—

(3) Candidates who produce satisfactory evidence that they have passed an examination in chemistry and physics or in chemistry or physics which exempts them from further examination in one or both subjects for the Degree in Medicine of any University in the British Empire, or of a Foreign University recognised by the Examining Board in England, will be exempted from the subject or subjects in which they have passed.

be revised so as to read:—

(3) Candidates will be exempted from the pre-medical examination who produce satisfactory evidence: (*a*) of having been registered as medical students by the General Medical Council: or (*b*) of having passed a preliminary examination in general education recognised by the Examining Board in England, and a pre-medical examination in chemistry and physics conducted by any of the qualifying bodies whose degrees or diplomas are registrable on the Medical Register; or (*c*) of having passed an examination in chemistry and physics for the Degree in Medicine or Science of any University in the British Empire or of any Foreign University recognised by the Examining Board in England.

A report was received from Dr. R. A. Young, the visitor appointed to inspect the examinations of the Egyptian Medical School and Hospital, Cairo, and the present conditions of teaching in the Medical School and Hospital, and certain recommendations for transmission to the Minister of Education of the Egyptian Government were adopted.

The Committee of Management report that they are satisfied that the conditions laid down by the Royal Colleges for the recognition of the Welsh National School of Medicine, Cardiff, have now been fulfilled, and they recommend that the Welsh National School of Medicine, with the Cardiff Royal Infirmary, be included in the permanent list of institutions recognised by the Conjoint Board.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—On April 28th Mr. V. E. Negus will lecture on New Points in the Mechanism of the Larynx; on April 30th Prof. W. E. Gallie will lecture on the Transplantation of the Fibrous Tissues in the Repair of Anatomical Defects; and on May 2nd Mr. H. Ernest Griffiths will lecture on Further Relationships of Diseases of the Gall-bladder to the Secretory Functions of the Stomach and Pancreas. All these lectures will be held at 5 P.M. at the College.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates have passed the Final Dental Examination and have been granted the diploma L.D.S. R.C.S. Edin.:—

Archibald Matthew, Charles F. Mummery, John A. Watt, John Brown, Robert S. Matthew, Henry N. McKenzie, John C. Shiach, Gavin J. Bell, Harry B. Kyle, Cameron F. Murdoch, David D. Radford, James Hughes, John Murphy, James B. Kerr, John S. MacHardy, John Campbell, Robert Bell, Frederick A. Hunter, George M. Brigg, Agnes M. E. Wilson, Thomas Jamieson, Stuart J. Beaton, Orry S. Crowthers, George R. Moffoot, Edward N. Jamieson, Francis Mackenzie, Lesslie Macduff, and James Brydone.

MIDDLESEX HOSPITAL MEDICAL SOCIETY.—The 150th anniversary special meeting of the society will be held at the Middlesex Hospital on Thursday, May 22nd, at 8.15 P.M., when Sir James Kingston Fowler will deliver an address entitled Links with the Past. After the address there will be an exhibition of objects of historical interest to the Middlesex Hospital, and pathological and bacteriological exhibitions.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A number of post-graduate courses have been arranged for April–May, and copies of the syllabus can be obtained from the Secretary, 1, Wimpole-street, W.1. Commencing on Monday, April 28th, is a two weeks' intensive course at the Hampstead General Hospital, comprising clinical daily work in medicine and surgery with a formal lecture or lecture-demonstration every afternoon. In association with this hospital demonstrations, &c., will also be given at the Paddington Green Children's Hospital and the North-Western Fever Hospital. From April 28th to May 10th will be held a short course in dermatology at the Hospital for Diseases of the Skin, Blackfriars, including instruction each afternoon from 2.30, and a venereal clinic twice a week from 5.30 P.M. At the Maudsley Hospital, Denmark Hill, a month's course in Psychological Medicine will be held from May 5th to 30th. The course will consist of lecture-demonstrations on various aspects of Mental Diseases. The various facilities of clinical instruction at the hospital will be open to those attending the course. As already mentioned, a comprehensive course in Venereal Diseases will be held at the London Lock Hospitals (Dean-street and Harrow-road) from May 5th to 31st. The course will include clinical work every day in the wards and out-patients' department, and a lecture on some branch of the subject will be given each day at 91, Dean-street, W. 1. At the Central London Ophthalmic Hospital from May 5th to 31st a series of lecture-demonstrations on subjects of interest to the specialist as well as to the general practitioner will be given in Ophthalmology, and, if desired, an Operative Surgery class can be arranged for. A fortnight's course in Proctology will be held at St. Mark's Hospital for Diseases of the Rectum from May 12th to 24th, consisting of operations, demonstrations, and lectures by members of the staff. Also beginning on May 12th and continuing until the 24th will be given a course on Infants' Diseases at the Infants Hospital The comprehensive syllabus covers clinical demonstrations, "round table" consultations, lectures, &c. An intensive course in Laryngology, Rhinology, and Otology will be held at the Central London Throat, Nose, and Ear Hospital from May 12th to 30th. A programme comprising clinical demonstrations, lectures, &c. has been arranged for from 9.30 A.M. to 5 P.M., and for those desiring it an Operative Surgery class will be available. The special intensive course to be given from May 19th to 31st at the North-East London Post-Graduate College (Prince of Wales's General Hospital), Tottenham, will include demonstrations of clinical methods and cases, &c. The 4.30 P.M. formal lectures will be free to general practitioners.

INDIAN MEDICAL SERVICE DINNER FUND.—The annual dinner of the Indian Medical Service will be held at the Trocadero on Wednesday, June 18th, Colonel J. J. Pratt in the chair. Tickets and all particulars may be obtained from the honorary secretaries, 63, Addison-road, Kensington, W. 14.

Dr. H. B. Brackenbury has been awarded the gold medal of the British Medical Association "for his arduous and distinguished services to the Association and the medical profession."

EUGENICS EDUCATION SOCIETY.—A lecture on State Certificate of Marriage will be delivered by Dr. R. A. Gibbons at the rooms of the Royal Society, Burlington House, Piccadilly, on Friday, May 2nd, at 8.30 P.M. Major Leonard Darwin will be in the chair.

FOUR lectures on the Brain and the Mind will be delivered by Sir Robert Armstrong-Jones at Gresham College, Basinghall-street, London, E.C., on Tuesday, April 29th, April 30th, May 1st, and May 2nd, at 6 P.M. Admission is free.

MANCHESTER ROYAL INFIRMARY.—Sir John Bland-Sutton, President of the Royal College of Surgeons of England, will give the Lloyd Roberts lecture at the Manchester Royal Infirmary on Oct. 7th. His subject will be Attic Salt for Gall-stones.

LEICESTER ROYAL INFIRMARY.—At the annual meeting of the infirmary on April 16th Mr. C. J. Bond, vice-president of the infirmary, who presided, spoke of the necessity of establishing coöperation between the voluntary hospital, the municipal infectious diseases hospital, the mental hospital, the Poor-law infirmary, the sanatorium, the tuberculosis dispensary, and the school clinic in every area. It would be also necessary, he said, to spread the work done by the members of the present honorary staffs of voluntary hospitals over a larger section of the medical profession, and sufficiently remunerate the work performed and the services rendered so as to do away with that unhealthy competition between public hospital work and private practice, which was now exercising an injurious effect not only on the medical profession itself, but on the interests of the hospitals and the public.

A USEFUL NURSING DIRECTORY OF LONDON.—Hospital almoners and others who desire to secure home nursing for cases of sickness in the poorer districts of London will be glad to know that the directory, compiled and issued in 1917 by the Central Council for District Nursing, has now been reissued with a supplement which brings up to date the information as to the appropriate nursing association for every street in London. Some 30,000 streets and places lying within the County of London are included in the directory, which has also an index giving the names and addresses of all the recognised district nursing associations and a reference number indicating the association to which application should be made for nursing help in any particular street. Telephone numbers are also given. The directory has already proved a most useful aid to social workers and hospital officials, as well as to doctors. The price has been fixed at 2*s*. 6*d*. (or 2*s*. 9*d*. post free), which is half the actual cost of production, in order to make the information more readily accessible. Copies can be obtained from the Secretary-Visitor, Central Council for District Nursing in London, 20, Cockspur-street, London, S.W. 1.

ST. MARY'S HOSPITAL: INSTITUTE OF PATHOLOGY AND RESEARCH.—A course of lectures on Pathological Research in its Relation to Medicine has been arranged for the summer session. These lectures will be given in the lecture room of the Bacteriological Department of the Institute on Thursday afternoons at 5 P.M. On April 24th Sir Almroth E. Wright, F.R.S., gave the first lecture on the Anti-Bacterial Functions of the Leucocytes. On May 1st Sir Thomas Lewis, F.R.S., will lecture on Reactions of the Skin to Injury. On May 8th Prof. A. V. Hill, F.R.S., will discuss the Function of Hæmoglobin in the Body, and on May 15th Dr. Andrew Balfour will deal with Some Medical and Sanitary Lessons. On May 22nd Dr. Major Greenwood will give a lecture entitled Is the Statistical Method of any Value in Medical Research? On May 29th Dr. Gordon M. Holmes will lecture on the Ductless Glands and Personality. On June 5th Mr. Wilfred Trotter will speak on the Sensibility of the Skin in Relation to Neurological Theory, and on June 12th Prof. William Bateson, F.R.S., will give the final lecture on the Determination of Sex. These lectures are open to all members of the medical profession and to all students in medical schools without fee.

DONATIONS AND BEQUESTS.—Under the will of the late Alderman H. E. Lawrence, of Lee, Kent, the St. John's Hospital, Lewisham, will receive £1500, and the Blackheath and Charlton Hospital and the Miller Hospital £100 each.—The Chelsea Hospital for Women has received £100 from the Goldsmiths' Company for the Nurses' Home.—An anonymous bequest of £10,000 has been made to the Royal Society for the prosecution of original research in medicine for the prevention of disease and the relief of suffering, with special attention to tropical diseases in British possessions, cancer, and tuberculosis.—Under the will of the late Colonel J. S. Tait, of Edinburgh, the Kilmarnock Infirmary will receive £500, and the Glasgow Deaf and Dumb Institution and the Glasgow Asylum for the Blind £100 each.

QUEEN'S UNIVERSITY (BELFAST) CLUB, LONDON.—The first dinner of this club was held in the Connaught Rooms, London, on April 10th. Colonel Thomas Sinclair occupied the chair. The company, composed of Belfast graduates and their guests, numbered close on 150. Many members from Liverpool, Manchester, Portsmouth, Bath, and the Midlands were present. Enthusiastic speeches, in tribute to the Alma Mater and in support of the club, made by the chairman, Lord MacDonnell, Sir Lynden Macassey, Prof. J. A. Lindsay, and Mr. R. W. Livingstone, Vice-Chancellor of the University, were much appreciated. There were also present Sir David Semple, Sir W. Maxwell, Colonel R. McCarrison, Rev. D. Wilson, Mr. J. R. Fisher, K.C., Dr. James Chambers, and Dr. W. Douglas. A musical programme added greatly to the enjoyment of the evening. Altogether the reunion was a most happy and successful one. To mark his year of office, the President kindly presented a Gold Challenge Cup to the club. Members wishing to compete for this trophy should at once communicate with Mr. A. McKinstry, 4, Central Buildings, Westminster, London, S.W.

ROCKEFELLER MEDICAL FELLOWSHIPS.—The Rockefeller medical fellowships for the academic year 1924–25 will be awarded by the Medical Research Council in June, and applications should be lodged with the Council not later than May 31st. These fellowships are provided from a fund with which the Medical Research Council have been entrusted by the Rockefeller Foundation. Fellowships are awarded by the Council to graduates who have had some training in research work in the primary sciences of medicine or in clinical medicine or surgery and are likely to profit by a period of work at a university or other chosen centre in the United States before taking up positions for higher teaching or research in the British Isles. A fellowship will have the value of not less than £350 a year for an unmarried fellow, with extra allowance for a married fellow, payable monthly in advance. Travelling expenses and some other allowances will be made in addition. Full particulars and forms of application are obtainable from the Secretary, Medical Research Council, 15, York Buildings, Adelphi, London, W.C. 2.

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Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Criminal Responsibility Bill.

THE text has been issued of Lord Darling's Bill to amend the law relating to the criminal responsibility of accused persons suffering from mental disease. Clause 1 provides that (1) a person is not responsible to the law for an act of omission charged against him as a crime, if at the time of doing the act or of making the omission he is proved to be suffering from such a state of mental disease or disorder as deprives him (*a*) of capacity at the time to know, understand, and appreciate the physical nature and quality of the act done or omission made; or (*b*) of capacity to know, understand, and appreciate at the time that the act done or omission made was wrong; or (*c*) if at the time the act was done or omission made he was suffering from such a state of mental disease as therefrom to be wholly incapable of resisting an impulse to do the act or make the omission.

(2) A person who is suffering from mental disease at the time of doing the act or of making the omission charged against him as a crime and by reason of such mental disease is affected by delusions on some specific matter or matters, but whose mental condition does not render him irresponsible to the law within the meaning of Subsection (1) of this Section, is criminally responsible for such act done or omission made to the same extent, and as if the facts with respect to which such delusions exist were real.

HOUSE OF COMMONS.

TUESDAY, APRIL 15TH.

Conditions of Service in Mental Hospitals.

Mr. RAYNES asked the Minister of Health the hours and conditions of service of staffs employed in mental hospitals; whether they varied in different institutions, and, if so, for what reason; and, seeing that a 60-hour week was too long for people to be engaged in this class of service, would he take steps to secure a uniform basis of service and remuneration throughout Great Britain.—Mr. GREENWOOD (Parliamentary Secretary to the Ministry of Health) replied: The hours and conditions of service vary in public mental hospitals because they are determined by the visiting committees of the various local authorities by whom the hospitals are provided. Moreover, the conditions of the work vary to some extent in different institutions.

The Maternity Convention.

Sir ARTHUR SHIRLEY BENN asked the Minister of Labour what States had ratified the Maternity Convention drafted by the International Labour Conference at Washington in 1919.—Mr. T. S. SHAW replied: Bulgaria, Greece, Roumania, and Spain have formally deposited their ratifications of this Convention with the Secretary-General of the League of Nations, and I understand that its ratification has been recommended or authorised in certain other countries.

Fees of Post Office Medical Officers.

Sir EDWARD ILIFFE asked the Postmaster-General whether, in view of the fact that he had authorised postmasters to reduce the capitation fee paid to medical officers of the department to 11*s.*, that this reduced fee was fixed without consultation with the medical officers concerned, and that he authorised postmasters to advise medical officers at the end of March of this reduction, which was to be made retrospective to Jan. 1st, he would withdraw these reductions, which were at variance with the contracts.—Mr. VERNON HARTSHORN replied: It was part of the agreement reached with the British Medical Association in March, 1922, when the fee of 11*s.* 6*d.* was fixed, that the capitation fee for Post Office medical officers should be subject to review at the end of 1923, and this fact was made known to all medical officers at the time. The reduction from 11*s.* 6*d.* to 11*s.* was made in view of the fall in the cost of living since March, 1922, and is similar to that made from the same date and for similar reasons in the fee of doctors on the Health Insurance panels. The British Medical Association was informed of the proposed reduction as soon as it had been decided upon.

WEDNESDAY, APRIL 16TH.

Assessment of Invalided Naval Ratings.

Sir BERTRAM FALLE asked the Parliamentary Secretary to the Admiralty what course was open to an invalided naval rating whose invaliding disability was attributable to service and who was not satisfied with the degree of disability assessed by the Naval Medical Board.—Mr. AMMON replied: It is open to an invalided rating to appeal to the Board of Admiralty under whose directions the case would be reviewed in the light of any representations made on his behalf.

Sir BERTRAM FALLE asked the Parliamentary Secretary to the Admiralty whether it was the practice to make a reduction in the pensions of men invalided for non-attributable disabilities associated with specific disease; whether any scale of deduction existed; whether any disease other than venereal was included in the practice; and whether naval ratings generally were aware that such a practice existed, and under what legal sanction.—Mr. AMMON replied: The reply to the first part of the question is in the affirmative. The deduction made is considered on the merits of each case. A disease such as alcoholism would be included in the practice. The practice is sanctioned by the terms of Order in Council of Feb. 6th, 1922 (Statutory Rules and Orders, 1922, No. 132). These regulations have been published in Fleet Orders.

Notification of Births Regulations.

Lieut.-Colonel FREMANTLE asked the Minister of Health whether his predecessor in June of last year received a memorandum from the Central Midwives Board urging that the name of the person actually conducting the delivery of a child should be inserted in the form prescribed under the Notification of Births Act; and whether an alteration would be made in the form of notification of births accordingly.—Mr. WHEATLEY replied: The answer to the first part of the question is Yes. This suggestion will be considered in connexion with any proposed legislation amending the Notification of Births Acts or the Midwives Acts.

Maternal Mortality.

Lieut.-Colonel FREMANTLE asked the Minister of Health if he was aware that the maternal mortality-rate for England and Wales during the last 20 years has been maintained at or about 4 per 1000 births, but that in midwives' cases it was under 2 per 1000; and whether, in view of the dangers arising from unqualified persons attending women in childbirth he would introduce or support a Bill providing that no uncertified woman should attend women in childbirth except in an emergency or under the personal direction and in the presence of a registered medical practitioner.—Mr. WHEATLEY replied: As regards the first part of the question the facts are as stated in regard to the maternal mortality-rate for all cases, but I have no complete information as to midwives' cases. The suggestion in the second part of the question will receive consideration in connexion with any proposed legislation amending the Midwives Act.

League of Nations Opium Conference.

Mr. ORMSBY-GORE asked the Prime Minister whether the projected League of Nations Opium Conference had been convened for the purpose of giving effect to the principles submitted by the United States representatives on the Opium Advisory Committee last May; whether he was aware that those principles included the restriction of the use of opium and cocaine products to medical and scientific purposes, and the restriction of the production of raw opium to the quantity needed for such purposes alone; and whether the representative of His Majesty's Government on the preparatory committee for the Conferences would be instructed to give support to these proposals.—Mr. DAVIES (Under Secretary for the Home Office) replied: The purpose for which the Conference has been summoned is to consider the possibility of concluding an agreement or agreements for the limitation of the amounts of morphine, heroin, and cocaine to be manufactured, and the limitation of the amounts of raw opium and the coca leaf produced for export of the amounts required for such manufacture and other medicinal and scientific purposes, subject to an exception for those countries where opium-smoking is temporarily continued under Part II. of the Convention. The proposal that a Conference should be held with this object was put forward at the meeting of the Advisory Committee last May on behalf of the British Government, and the attempt to arrive at such agreements will receive the utmost support which the Government can give.

Diet in Casual Wards.

Mr. BRIANT asked the Minister of Health if he was satisfied that the diet allowed to inmates of casual wards was sufficient for the maintenance of health.—Mr. WHEATLEY replied: I am advised that the diet is sufficient for the purpose for which it is intended, but certain suggestions for making it more palatable are under consideration, and I hope for some improvement.

Government and the Spahlinger Treatment.

Mr. ALFRED T. DAVIES asked the Minister of Health whether he was aware that the New Zealand Government offered £50,000 to develop the Spahlinger treatment of consumption on the condition that the Ministry offered a similar amount; whether the Ministry had adequately investigated the results of such treatment; and whether any action was to be taken.—Mr. Wheatley replied: The answer to the first part of the question is No. As regards the second part, I may say that all such inquiries have been made by my department as have been practicable in the absence of a supply of Mr. Spahlinger's preparations for scientific investigation. As regards the third part, I am anxious to arrange for a scientific investigation of this method of treatment in this country, and have personally given Mr. Spahlinger assurances to that effect.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, April 28th.

ODONTOLOGY: at 8 P.M.

Casual Communications:

Mr. J. H. Badcock: The Prevalence of Supernumerary and Supplemental Teeth among the Natives of India (with examples contributed by Mr. C. H. Badcock, of Madras).

Paper:

Mr. J. Howard Mummery: The Nerve Distribution to the Dentine.

Thursday, May 1st.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Annual General Meeting:

Election of Officers and Council for Session 1924–25.

Short Communications:

Prof. Louise McIlroy and Miss D. L. Leverkus: Changes in the Polarity of the Fœtus during the Later Weeks of Pregnancy.

Dr. George Graham: (1) The Effect of Pregnancy in a Patient with a Renal Glycosuria; (2) Report of a Case of Pregnancy Complicating Diabetes Mellitus, treated with Insulin.

Dr. Cuthbert Lockyer (President): A Case of Spontaneous Rupture of the Uterus.

Dr. H. Russell Andrews: An Unusual Case of Kidney Tumour.

Paper:

Mr. Alexander Galletly: Presacral Tumours of Congenital Origin, with a case in which a Cyst, complicating Pregnancy, was removed by the Abdomino-perineal Route.

Friday, May 2nd.

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.)

Annual General Meeting:

Election of Officers and Council for Session 1924–25.

Cases and Specimens:

Cases and Specimens will be shown by the following: Mr. Norman Patterson, Dr. Aldington Gibb, Mr. Wharry, Dr. Dan McKenzie, and others.

ANÆSTHETICS: at 8.30 P.M.

Annual General Meeting:

Election of Officers and Council for Session 1924–25.

Paper:

Dr. Z. Mennell: Recent Experiences in America.

Saturday, May 3rd.

OTOLOGY: at 10 A.M. (Cases at 9.15 A.M.)

Annual General Meeting:

Election of Officers and Council for Session 1924–25.

Paper:

Mr. F. B. Gillespie: Aural Surgery at a Fever Hospital.

Cases and Specimens:

Dr. P. Watson-Williams: Case of Labyrinthine Vertigo due to Sphenoidal and Ethmoidal Sinusitis.

Other cases will be shown.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, April 28th, to Saturday, May 3rd.

Hampstead General Hospital, in conjunction with the North-Western Fever Hospital and Paddington Green Children's Hospital. Special Intensive Course.—Hospital for Diseases of the Skin, Blackfriars. Clinical instruction in the Out-patient Department every afternoon from 2.30 P.M. Tuesday and Friday, Venereal Clinic from 5.30 to 7 P.M.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

Monday, April 28th, 5 P.M.—Mr. V. E. Negus: New Points in the Mechanism of the Larynx.

Wednesday. 5 P.M.—Prof. W. E. Gallie: The Transplantation of the Fibrous Tissues in the Repair of Anatomical Defects.

Friday, May 2nd.—5 P.M., Mr. H. Ernest Griffiths: Further Relationships of Diseases of the Gall-bladder to the Secretory Functions of the Stomach and Pancreas.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

Tuesday, April 29th.—5 P.M., Prof. A. V. Hill: The Recovery Process in the Isolated Muscle. First Oliver-Sharpey Lecture.

Thursday, May 1st.—5 P.M., The Recovery Process in Man. Second Oliver-Sharpey Lecture.

UNIVERSITY COLLEGE, Gower-street, W.C.

(University of London Advanced Lecture in Hygiene.)

Friday, May 2nd.—5 P.M., Prof. Dr. C. Eijkman: Influence of Tropical Climate on Man. (To be given in English.)

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, April 28th.—2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. Simson: Diseases of Women.

Tuesday.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

Wednesday.—10 A.M., Dr. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients. 2 P.M., Dr. Pernet: Skin Dept.

Thursday.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

Friday.—11 A.M., Dr. McDougal: Electrical Dept. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.

Saturday.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital. (At 4.30 P.M.)

Monday, April 28th.—Dr. A. J. Whiting: Auricular Fibrillation and Flutter.

Tuesday.—Mr. C. H. Hayton: Œsophageal Growth, Treatment and Diagnosis.

Wednesday.—Dr. J. Browning Alexander: The Significance of Pleural Effusions.

Thursday, May 1st.—Mr. H. W. Carson: Diagnosis of Cancer of the Colon.

Friday.—Dr. C. E. Sundell: Dyspepsias of Childhood.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, W.

Tuesday, April 29th, 5.15 P.M.—Prof. Joseph Barcroft: The Effect of Altitude on Man (Lecture I.).

Saturday, May 3rd, 3 P.M.—Dr. F. A. E. Crew: Heredity and Sex (Lecture I.).

THE ROYAL SANITARY INSTITUTE, 90, Buckingham Palace-road, S.W.

Wednesday, April 30th, 5.30 P.M.—Dr. Charles Porter: The League of Nations Health Officers Interchange, in the United States.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.

Thursday, May 1st.—Mr. Rivett: Normal Labour.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

Monday, April 28th.—(At the Children's Hospital.) Mr. W. A. Thompson: Pyloric Stenosis in Infants.

Tuesday.—(At the Southern Hospital.) Mr. Douglas Crawford: Surgical Cases.

Wednesday.—(At the Northern Hospital.) Mr. G. C. E. Simpson: Some Abdominal Cases.

Thursday, May 1st.—(At the Stanley Hospital.) Mr. J. T. Morrison: Swellings of the Knee-joint.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

Tuesday, April 29th.—4.15 P.M., Dr. E. B. Leech: Some Notes on Sanatoria and the Treatment of Tuberculosis.

Appointments.

Clark, C. A., L.D.S.R.C.S. Irel., has been appointed Honorary Consulting Radiologist to the Royal Dental Hospital.

Cowburn, A. D., M.R.C.S., L.R.C.P. Lond., D.P.H., Coroner for the Southern District of London.

Leapingwell, A. E., L.R.C.P. Lond., M.R.C.S., M.O.H., Certifying Surgeon under the Factory and Workshop Acts for Winslow.

Reid, W., M.B., Ch.B. Edin., Medical Superintendent, Burntwood Mental Hospital.

Smith, Norman F., B.M., B.Ch., M.R.C.S., L.R.C.P., Registrar, Kitchener School of Medicine, Khartoum.

Smith, R. Eccles, F.R.C.S. Edin., Honorary Surgeon to the Corbett Hospital, Stourbridge.

Wilson, Mary, M.B., Ch.B. Edin., Resident Medical Officer, Dundee East Poorhouse and Hospital.

Vacancies.

For further information refer to the advertisement columns.

Battersea Borough Council.—Part-time Asst. M.O. for Maternity work. £1 11*s.* 6*d.* per session.
Birkenhead and Wirral Children's Hospital, Woodchurch-road.—Hon. Radiologist.
Birkenhead Borough Hospital.—Third H.S. £100.
Cardiff, University College of South Wales, &c.—Prof. of Path. and Bact. £1500.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Reg. Out-Patients.
City of London Hospital for Dis. of Heart and Lungs, Victoria Park, E.—H.P. £125.
East Sussex County Mental Hospital, Hellingly.—Pathologist. £500.
Essex Administrative County.—Asst. County M.O.H. £700.
Exeter City Mental Hospital.—Asst. Med. Supt. £350.
Hemel Hempstead, West Herts Hospital.—Res. M.O. £200.
Home Office, Whitehall, S.W.—Woman Medical Inspector of Factories. £800.
Hospital for Consumption and Dis. of Chest, Brompton, S.W.—Asst. in Dept. of Pathology. £250.
Inverness Northern Infirmary.—Jun. Head Resident. £100.
Leeds General Infirmary.—Res. Ophth. O. £120. Also Ophth. and Aural H.S. £50.
London Lock Hospital, Dean-street and Harrow-road.—Surg. Reg.
London Temperance Hospital, Hampstead-road, N.W.—Med. Registrar. 40 guineas.
Loughborough and District General Hospital and Dispensary, 9, Leicester-road.—Res. H.S. £175.
Mid-Wales Counties Mental Hospital, Talgarth, Breconshire.—Asst. M.O. £350.
Newcastle-upon-Tyne Hospital for Sick Children.—Hon. Asst. S.
Pietermaritzburg, S. Africa, Grey's Hospital.—H.S. £400.
Queen's Hospital for Children, Hackney-road, E.—Asst. S. to Ear, Nose, and Throat Dept.
Royal Ear Hospital, Dean-street, Soho, W.—Hon. H.S.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £175. Asst. R.M.O. £130.
Southampton Borough Isolation Hospital.—R.M.O. £360.
West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Cas. P. £200.
Whitehaven and West Cumberland Infirmary. — Res. H.S. £200.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Burghead, Morayshire; and Lavenham, Suffolk.

Births, Marriages, and Deaths.

BIRTHS.

HANCOCK.—On Easter morning, at Bexley, Kent, to Vera Primrose, wife of Dr. Allen Coulter Hancock, *M.C.*—a daughter.

HARTIGAN.—On April 10th, at the Royal Hamadryad Seamen's Hospital, Cardiff, the wife of Dr. J. Hartigan, of a daughter.

MOORE.—On April 15th, at Ickleton, Great Chesterford, Essex, the wife of Dr. J. York Moore, of a daughter.

PAVEY-SMITH.—On April 15th, at 9, Victoria-avenue, Harrogate, the wife of A. B. Pavey-Smith, *M.C.*, F.R.C.S., of a daughter.

ROCHE LYNCH.—On April 12th, at Sussex-place, Slough, the wife of G. Roche Lynch, M.B., of a daughter.

ROE.—On April 14th, at Ardington-road, Abington Park, Northampton, the wife of Robert Bradley Roe, M.R.C.S., of a son.

MARRIAGES.

PARRY—WILLIAMS.—On April 12th, at St. Andrew's, Leytonstone, R. Hughes Parry, M.B., B.S., D.P.H., to E. Joan Williams, L.R.C.P., M.R.C.S., eldest daughter of Mr. and Mrs. Percy E. Williams, of Wanstead.

DEATHS.

BARRETT.—On the 19th inst., at Le Havre, France, aged 64 years, Dr. William H. Barrett, of 29, Park-crescent, Southport.

DALTON.—On April 17th, very suddenly, Thomas Dalton, M.D., of Llandudno.

FOX.—On April 20th, at Jordans, Beaconsfield, R. Hingston Fox, M.D., F.R.C.P., aged 71.

OLIVER.—On April 14th, at Manningham-lane, Bradford, George Henry Oliver, M.R.C.S. Eng., D.O. Oxon., Senior Consulting Surgeon to the Bradford Royal Eye and Ear Hospital, aged 63.

REECE.—On Easter Day, at Birchington, suddenly, Richard James Reece, C.B., M.D., Senior Medical Officer Ministry of Health, late Surgeon-Colonel H.A.C., aged 61.

WALSHAM.—On April 13th, Palm Sunday, at Harley-street, Hugh Walsham, M.D., F.R.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE LIFE AND DOCTRINE OF SIR EDWIN CHADWICK.

By Sir William Job Collins, K.C.V.O., M.D., M.S., B.Sc. Lond., F.R.C.S. Eng.,
CHAIRMAN OF THE CHADWICK TRUST; PRESIDENT OF THE SANITARY INSPECTORS' ASSOCIATION.

(*Concluded from p. 834.*)

PART II.

Chadwick's Later Work.

DURING the 36 years which remained to Chadwick after the closure of his official life, he pursued, with little evidence of resentment and with the same ardour, the cause of sanitary and social reform. Pamphlets, presidential and other addresses, reviews and critiques came from his pen at frequent intervals, and these with his voluminous official reports cover a period of 60 years of continuous labour. These *disjecta membra* of what would compose a considerable library were collated and condensed by Richardson. Some 26 works of Chadwick's, including some cross references, appear in the British Museum catalogue. A yet more representative collection contained in some dozen volumes of pamphlets, essays, &c., are to be found in the library of University College. One can, in the time at my disposal, only touch lightly on these varied activities.

Chadwick coöperated with Miss Nightingale during and after the Crimean War in the reform, or rather the inauguration of military hygiene. He opposed taxes on knowledge and condemned the "fiscal rapacity" that restricted journalism and checked advertisement. He was a zealous advocate of competitive examinations for admission to the public service and the stout opponent of political patronage. One recalls the story of Melbourne when one of his ministers confessed to him that having to choose between two candidates for a valuable office, one a stranger and the other a relative, he proposed, *ceteris paribus*, to give it to his relative. "So should I," said Melbourne, "and damn *ceteris paribus*." He discussed the psychological and physiological limits of mental labour, the feeding of school-children, the physical and moral advantages of drill in school, and supported the volunteer movement. He was a member of the first London School Board, advocated baths in schools and adequate playgrounds. He emphasised the danger of spread of infectious diseases by schools and looked to physical training and sanitary surroundings "to banish epidemic and eruptive diseases." He was strongly opposed to corporal punishment, he condemned payment by results and the rigidity imposed by the code. He concerned himself with the construction of schools, suggested warming through hollow-tiled floors, advised double-paned windows, and left-lighting.

In a supplementary report in 1843 he had exposed the perils of interment in city churchyards, of delayed burial through lack of mortuaries to which the dead might be removed, pending interment, out of crowded homes, and endorsed Sir Christopher Wren's advocacy of cemeteries in the suburbs of towns. At Mr. Gladstone's suggestion he investigated and reported on the extension of cheap postal telegraphy.

Many of his addresses and essays were in English, which he wrote with ease; in 1864 he met Napoleon III. in Paris, who asked him what he thought of his improvements and he replied: "Sir, Augustus found Rome brick and left it marble; if your Majesty having found Paris stinking will leave it sweet you will more than rival the first Emperor of Rome." Common lodging-houses, as he found them, he described as schools for juvenile crime and vice and fertile agencies in propagating infectious disease, and recommended that they should be both licensed and inspected. From 1883-1889 he was President of the Sanitary Inspectors' Association, and his addresses were rightly regarded as among the chief sanitary events of the year.

Such varied instances as I have cited by no means exhaust the catalogue of his activities; as Richardson remarks, "his universality is unique." "He is found dealing with building construction as if he were an architect, with engineering as if he were an engineer. In treating of diseases he might often be taken for a physician, in matters of administration a politician, while he is always in his right place as a statistician." His wide knowledge of Government departments and their ways had led him to distrust the methods by which legislation is initiated and conducted, and in 1859 he read a paper on the subject before the Society for the amendment of the law. He condemned what he called the close Cabinet method of preparing Bills as well as Select Committee procedure, preferring open and deliberate inquiry by Royal Commissioners specially appointed for their competence and experience, or by a Committee of the Privy Council assisted as regards local inquiries by Sub-Commissioners. J. S. Mill and Sir James Stephen were supporters of these proposals. A little coterie of "friends in council" with Chadwick as the centre and Mill, Rowland Hill, Lyon Playfair, and Neil Arnott as members, met at each others' houses and were very active in the 'forties and 'fifties of last century in incubating plans for administrative reform and social betterment.

Parliamentary Candidature.

Richardson and the National Dictionary of Biography state that in 1867 Chadwick unsuccessfully contested London University for Parliament. He did indeed write an address to the electors, which was backed by J. S. Mill, but he did not go to the poll. I find from the Parliamentary Poll Book that Mr. Robert Lowe was returned unopposed in 1867 as the first member for the seat, which he retained for 12 years, and which Disraeli facetiously asserted he had created and predestinated for that erratic and unbeloved politician. Chadwick was, however, induced to come forward in 1868 for Kilmarnock Burghs and was beaten by the Hon. E. P. Bouverie by 2892 to 1148. The statement which he afterwards published in reference to his defeat betrayed his naïve and chagrined disillusion at the fickleness of electors, the delusiveness of public meetings, and the deceitfulness of political promises. He had indeed experienced a previous Parliamentary reverse at Evesham in 1859.

He also at one time coquetted with the electors of Southampton and of Middlesex, and to the latter issued an address intimating his willingness to come forward if assured of adequate backing, while disclaiming any intention of canvassing, attending meetings, or embarkiug on any expenditure beyond the official fees. The address dealt at length with metropolitan drainage, burial boards, extravagance and corruption in local administration, and advocated physical, educational, and moral improvement of the labouring classes and the "cutting up of political patronage by the roots." Such matter of fact doctrine and high ideals were, however, not calculated to split the ears of political groundlings. In short, you could not make a political hack or a safe whip's man out of Edwin Chadwick. He was ill-adapted for the platform, especially the political platform—in truth, he was no orator. Even the friendly Richardson wrote: "When he first gets up to speak without book he looks an orator; but a few moments dispel the illusion; he bends forward, he speaks in a low voice, he disputes some points logically, then falls into confusion, then recovers his strain, goes back, and, in fact, if he speaks long, as he is wont, he wearies the listener, and takes sometimes the points out of his own arguments."

His Political Philosophy.

In 1885, five years before his death, Chadwick sought to summarise and generalise the principles which had inspired his life's work and he published a collection of papers entitled "On the Evils of Disunity in Central and Local Administration" in which he took for his text the maxim of Bentham, "always to do the same thing in the same way, choosing the best, and always to call the same thing by the same name." These papers betray that diffuseness, repetition, and unattractiveness of style which his kindly biographer has deplored. He contended for larger areas than the parish for local administration, a responsible central supervisory authority, detailed administrative work to be discharged by competent salaried officers. He indicated how his principles which had inspired the Poor-law Amendment Act (1834) and his reports on the sanitary condition of the labouring population of Great Britain should be applied in the case of water-supply, smoke abatement, fire prevention and extinction, abattoirs, disposal of the dead, gas-supply, slum clearances, police administration, &c., and adumbrated the appointment and duties of a "Minister of Education" and a "Minister of Health." In the matter of the government of London he claimed that "the attainment of complete unity of administration would open up prospects of grievously needed relief"; while recognising that Sir Benjamin Hall's Act of 1855, which set up the ill-fated Metropolitan Board of Works, was a step in the direction of unification, he deplored the "vestralisation" whereby it was prejudiced owing to constitution by indirect election. It was partly to this congenital defect that Lord Herschell's Commission of 1888 traced its undoing and unhallowed end.

Chadwick in this same work declaimed against the "jobocracy of vestrydom"; many vestrymen were, he declared, "persons whose time is worthless, who are ignorant and wasteful or obscure persons who have some sinister interests to promote." Their paid officers, he said, were "under the necessity of having to work down to ignorance instead of up to scientific administrative principles." Slum-owners in some cases "got possession of the local boards of sanitary authorities," and as the Royal Commission on Housing subsequently reported "many of those whose duty it was to see that a better state of things was effected were those whose interest it was to keep things as they were."

Like some of his contemporaries, Chadwick regarded drainage as constituting a large, perhaps too large a part of practical sanitation. In 1885 he still clung lovingly to the "separate system" as he called it, epitomised in the phrase "the rainfall to the river and the sewage to the soil," and he mercilessly condemned the "combined system" adopted by that "vestral authority" as he stigmatised it, the Metropolitan Board of Works.

Basing himself on Farr's vital statistics, he maintained that "good sanitary measures under unity" might secure for the whole of the metropolis a death-rate not exceeding 11 per 1000, which then only obtained in a few favoured West-end districts. When Farr began his labours a death-rate of 25 per 1000 was not uncommon in London; in 1921 we have seen it at 12·5 per 1000.

In exemplification of his gospel of "Unity" Chadwick recalls that by the Poor-law Amendment Act, which he fathered, some 16,500 parishes were condensed into 660 unions, with great saving of unnecessary and wasteful expenditure and a marked increase of efficiency in administration. He proudly quotes the exclamation of Mr. Gladstone, "What would have become of the Poor-law Amendment Act, which is perhaps the greatest reform of this century, if it had been entrusted to the local authorities of that day!" To those who charged him with being "all for centralisation" he retorted, "I am on principle for extensive de-centralisation by well-arranged local consolidation, for superior self-government over that which now exists; a true representation of the best local intelligence under unity in the place of disunity and local ignorance."

He repudiated the soft impeachment of being a benevolent despot; if he aimed at centralisation as against the corrupt and inefficient local self-government he had encountered, it was, he said, "centralisation for the protection of liberty . . . ." If he condemned the *laissez faire* doctrine of those who claimed liberty for themselves and denied it to others it was because he held "Liberty is a right with a corresponding obligation to respect it. Liberty consists of the power of doing anything which does not hurt another."

Looking back from 1885 to his old battles of the 'forties and 'fifties, he reflects with sorrow rather than with anger or resentment on the "vote obtained under the combination of interests" which killed the General Board of Health, and sent him into a premature pensioned retirement. He recalls "the continued serious contraventions, which I was unable to withstand, of principles which were not understood," and how despite the "vexations and obstructions of half-knowledge," he had felt "constrained to go on" "for the sake of the gain to be obtained by other men after my time," and he added, "I do not regret."

His Friends and Co-workers.

If Chadwick had many enemies, whose names are mostly forgotten, he had also some devoted friends and coadjutors whose services to mankind are gratefully remembered. Let us recall some of these, who accepted the Chadwick school of thought and lent their invaluable support to the reforms he urged so insistently, often on deaf ears and shut imaginations. I have already alluded incidentally to some of them.

Dr. Southwood Smith (1788-1861) was a man after Chadwick's own heart. Born in 1788, at first a Unitarian minister teaching a universalist doctrine in Edinburgh, he later graduated M.D. at that University. From 1824 to 1839, physician to the London Fever Hospital, he spoke with authority on infectious diseases. If he were open to Simon's charge of "immensely under-rating the independent importance of morbid contagia," he displayed "a perfectly proper zeal against filth." He wrote and spoke with equal felicity, was an excellent anatomist, and I have already referred to his services to his master Bentham both before and after the latter's demise. He was the author of "The Philosophy of Health" and "Illustrations of the Divine Government," and contributed much of the distinctively medical portions of Chadwick's reports.

Dr. William Farr was born in 1807 and died in 1883. It is not without interest to note that the combined ages of Farr, Southwood Smith, and Chadwick spanned nearly two and a half centuries. Farr was described by those who knew him as "a man with the liveliest intelligence, with a mind revelling in generalisation, and a master of methods by which arithmetic is made argumentative." He made

Descartes' "Discours de la Méthode" his model. He recognised the limitations as well as the virtues of statistics, and would not have disputed the epigram that while "figures cannot lie, liars sometimes figure." He was the first to essay lectures on hygiene, was a man of large and liberal views, a glutton for work, of great personal charm, and of genial disposition.

Dr. Kay, afterwards Sir James Kay-Shuttleworth (1804-1877), wrote on the moral and physical condition of the working classes, studied typhus in Edinburgh and cholera in Manchester and helped to develop the system of national education. Kay, Southwood Smith, and Neil Arnott were the first medical men to be enlisted by Chadwick into the national service of public health. Kay-Shuttleworth was a great Liberal and, shall I blush to say it, a great Free Trader ?

Yet another co-worker and contemporary of those early Victorian days stands out pre-eminently as a sanitary reformer of the Chadwick type ; one whose heroic ministrations initiated military hygiene, and brought to the succour of the sick and wounded an informed gentleness and a humane efficiency which have placed the name of Florence Nightingale second to none among the venerated of her sex. It was Chadwick who assisted and encouraged her in drawing the moral of the Crimean muddling and in applying sanitary science to the army alike in peace and war. It was he who urged her to enlist the support of Kinglake and helped to popularise her "Notes on Nursing" with her plea for household hygiene and for "ample ramparts of fresh air" against zymotic diseases. It was Chadwick, too, who counselled her to continue her labours after the death of Sidney Herbert—her "Master" as she called him. With John Stuart Mill and Chadwick she coöperated in Poor-law and sanitary reform, and when the former died of fever at Avignon in 1873 she reproached Chadwick for not having had regard to the sanitary environment of their mutual friend.

Another personality of true nobility, not indeed a medical man, but a mighty social reformer ever to be held in reverence and esteem, was linked with Chadwick and Southwood Smith, and less closely with the others I have named, in the work of the General Board of Health from 1848 to 1855—I mean the seventh Earl of Shaftesbury. That lofty and independent embodiment of *noblesse oblige* successively and not unsuccessfully laboured to improve our asylums, our factories, our slums, our ragged schools, and common lodging-houses. He worked as ever in the Great Taskmaster's eye, an evangelist indeed, and "the impersonation of the philanthropic spirit of the nineteenth century."

In Parliament Lord John Russell was for years Chadwick's champion and supporter, while sometimes a little perturbed by the sanitary reformer's disregard of so-called local authorities. Russell declared that the Poor-law Amendment Act had saved the country from great social evils, if not from social revolution, and Gladstone even spoke of it as "the greatest reform of the century." On another occasion Lord John Russell asserted that "there was no one to whose zeal and assiduity the country is more indebted than to Mr. Chadwick." It was Prince Albert who obtained for him a C.B. in 1848, but he did not receive the accolade until he was 89.

His Vindication.

I have attempted, as requested, though very imperfectly, to sketch "the life and doctrine of Sir Edwin Chadwick." Whatever the verdict of history may eventually be, he stands for solid achievement in the story of sanitary and social reform. Much that was at the time ridiculed as the vapouring of a visionary has become the veriest commonplace of daily sanitary administration. "The stone which the builders refused has become the headstone of the corner." By instinct a democrat and a devotee of reform, his ruthless pursuit of his "sanitary idea" arrayed against him the interests who shouted him down as an "autocrat." Yet he and his school of thought taught nineteenth-century England a very salutary lesson.

They did not seek the causes of pestilence in visitations of an offended Deity, nor in convulsions of Nature ; nor did they set much store on epidemic constitutions of the air, or obscure telluric disturbances. They believed that they found in external physical conditions, largely removable and mostly the product of ignorance or neglect, the proximate antecedents of certain infections called zymotic. These were the nemesis of sanitary shortcomings, the evil fruitage of transgression of hygienic law, and in a sense, therefore, the penalty of moral misdoing. They looked to personal and civic cleanliness, ample supplies of pure air and water and wholesome food, decent dwellings, adequate exercise, reasonable wages and hours of labour and leisure, and the prompt removal of filth and effete material as important factors of national and individual health, and as specially potent against the invasion of pestilence which aforetime walked in darkness, but whose causation was now made manifest by the dry light of science. Further, they believed in the common origin, in filthy conditions, of many so-called specific diseases ; they believed in their generation *de novo* by such antecedents, as well as by their propagation through infection. They believed in the mutability of specific diseases, under the influence of favourable or unfavourable soil, holding that the soil must be studied no less than the seed, and that even though certain vegetable or animal particles or ferments stood in some sort of causal relationship to them, the predisposing causes were not less important, and indeed could hardly be overrated. In practical application they sought to influence for good the environment of mankind, making the battle-ground with disease *without* rather than *within* the uninfected body, setting great store on the natural vigour of the healthy body itself as the best security against its successful invasion by inimical agencies.

This, then, was the wholesome doctrine inculcated by Chadwick and his school. "Man's mere opinions must ever be liable to error. By the motives which sway his heart can he alone be judged" ; and I venture to assert that any impartial student of the life work of Edwin Chadwick will rise from his task with the conviction that the motives which swayed his heart were the disinterested love of his fellow man and the devotion of the highest gifts to the amelioration of his lot and the betterment of his life.

WORMS IN A HERNIAL SAC.

IN a recent issue of *El Siglo Medico*, a medical journal published in Madrid, Dr. Carrasco, chief of the civil hospital at Bilbao, places on record a case which occurred in his hospital practice 25 years ago, and which has remained unique in his experience. He states that on Feb. 20th, 1899, a woman attended the hospital with a child of 2 years old who had a distended tumour in the scrotal region. The tumour was painful and as large as an orange, somewhat fixed, and dull on percussion. There was no fluctuation which might have indicated hydrocele. Pain had persisted for eight days and, according to the mother's statement, the hernia was congenital. The abdomen was tympanitic and the child suffered from vomiting of fæcal character and constipation. Believing this to be a clear case of strangulated hernia, Dr. Carrasco was much surprised to find on incision a sac whose walls were as transparent as glass, and distended to the point of rupture by a shapeless mass of living ascarid worms. The worms were twisting and writhing as if trying to break the walls of their prison. He attempted to empty the sac by gentle pressure but to no purpose ; the ascarids formed a tangled bundle, and the herniated mass was so large that even after incision of the constructing ring he was not able to reduce the condition. As something had to be done, the intestine was opened and more than 60 worms were withdrawn, several of which measured more than 25 cm. in length. While the intestinal wound was being sutured several more worms appeared in the diverticulum as if the intestine were a veritable breeding-ground. He removed the diverticulum and the child left the hospital when the wound was healed, but no subsequent history has been available. Dr. Carrasco states that he cannot find in medical literature any account of a similar condition.

The classical description of a varicocele (presumably also in Spanish medical schools) is that, on palpation, it "has the feel of a bag of worms." A bag of worms is hardly an object met with—much less palpated—in everyday practice, and in a case like the above, where such a bag actually came under the doctor's fingers, no suggestion was made that it had "the feel of a varicocele."

THE THERAPEUTICS OF PAIN.

WITH this title Prof. James J. Walsh, of New York, has written a paper[1] which is a study of the means taken to relieve pain from the earliest days of primitive medicine to the present time. His main thesis is that there has been no change in the underlying principle, although its uniformity has not been recognised, and the different cloaks under which it has been concealed have been regarded as fundamentally distinct from age to age. Suggestion, Prof. Walsh argues, has relieved more pain and cured more disability than any other known remedy, and whether it be conveyed by the metallic tractors of Dr. Elijah Perkins or by the phrases of Mr. Coué, the result is the same, provided the patient's mind is in a properly receptive state. The history of the famous St. John Long liniment a century ago is typical of certain remedies in every age. This liniment cured even tuberculosis and was held to be so marvellous in its action that the British Government of the day paid an enormous sum for its secret. When this was divulged and the liniment proved to be only an ordinary turpentine liniment made with the yolk of egg instead of with oil, it ceased to be so effective in the relief of pain. So great, indeed, was the disappointment over the publication of the formula of this liniment, that St. Long John was accused of concealing the real secret and selling a misleading formula. In his review of the history of the Perkins' metallic tractors, with which Oliver Wendell Holmes was treated, Prof. Walsh suggests that the English are peculiarly amenable to suggestion. He writes of Perkinism: "Dr. Perkins's son carried it over to England where there is always a fertile field for such novelties in therapeutics and where there are always a large number of educated people waiting to be cured by something that has just been discovered and has cured nobody before them, and was manifestly, in some way or another, intended for their special benefit."

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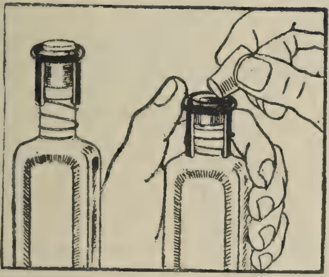
[1] International Clinics. Philadelphia: J. B. Lippincott Co. 1923. Vol. III. Thirty-second Series.

In the matter of quack remedies we are not prepared to argue that there is an excess of exports over imports as between this country and the U.S.A., but it is doubtful if Prof. Walsh is correct in associating, as he does, credulity with education. He is, however, assuredly correct in his statement that the well-known fallacy, *post hoc ergo propter hoc*, has always been the source of an immense amount of knowledge in medicine that had no foundation in reality. In so saying, he is but paraphrasing the familiar words of Josh Billings, "it would be much better not to know so much that you know so many things that ain't so."

THE POISON BOTTLE.

WITH the object of calling attention to the fact that a bottle contains poison, Messrs. Furness and Richardson, 61, Tweedy-road, Bromley, Kent, have placed upon the market an ingenious device (vide illustration) which makes it impossible to withdraw a cork until a semi-cylindrical guard, terminating in a ring, horizontal to, and at the level of the cork, is pressed down so as to permit the fingers taking hold of the cork. The guard, which can be made in various standard sizes and of various suitable materials, is kept in position by a spring placed around the neck of the bottle. The name of devices for preventing the careless use of bottles containing poison is legion, but it would seem impossible entirely to guard against human error in this connexion; any device, however, which compels individual attention is to be commended. The weak point in the present device is that it is not a fixture. Laziness might prompt its removal. The retail price of the article is 6*d*.



THE OLD CAIRO MEDICAL MISSION HOSPITAL.

SINCE the appearance of the last biennial report of the hospital many changes have taken place in Egyptian political life, notably the elevation of Egypt to the status of an independent kingdom, but as the principal medical officer of the hospital, Dr. F. O. Lasbrey, states in a preface to the report for the years 1922-23 the Egyptians themselves are not essentially changed and the hospital is still as popular as it was in the old days. It provides the accommodation of some 180 beds, 150 in the men's hospital and 53 in the women's hospital, while there are open-air pavilions which can accommodate from 600 to 800 cases for resident patients suffering from ankylostomiasis or bilharziasis. These cases lie on mats instead of beds, as most of the beds are devoted to surgical cases. While the numbers attending the hospitals during the years 1922-23 did not quite equal those of the record year 1920, they are not far short of that figure and the numbers of general surgical in-patients have kept up steadily. In the section for the treatment of ankylostomiasis 10,975 cases were treated during the two past years, and it is interesting to note that in addition to the above about 80 per cent. of the regular surgical in-patients take this course of treatment during their stay in hospital. These numbers show a considerable reduction on those of the last report. One reason for that is that the Government is now undertaking widespread treatment of this disease throughout the country. The routine treatment is still chenopodium oil, which must be fresh to be effective. In the section devoted to bilharziasis 2053 invalids were treated during the two years. The treatment adopted is that of injections of antimony tartrate, and the sodium salt is now used in preference to the potassium as the former was found to be less depressing. The latest figures seem to prove that, in practice, in every case the worm and eggs will be killed if only the patient will continue till the end of the course, but unfortunately a certain proportion find such benefit after taking two-thirds of the course that they do not wait to complete the requisite number of injections. In general surgical work the favourite anæsthetic for all suitable cases is stovaine given intrathecally, and over 3000 operations have been performed with this anæsthetic during the last few years with most satisfactory results. Egyptian splenomegaly is still treated by splenectomy, and the recent case mortality has been kept to the satisfactorily low percentage of 15·7. The ophthalmic section has shown the most marked progress during the last two years; nearly 25 per cent. of the total number of out-patients attending the hospital have been eye cases, the prevailing diseases being trachoma and trichiasis, for which, in the period under review, over 3000 operations were done. Considerable success attended the work carried on by means of tent hospitals during the winter months, two separate camp dispensaries being established.

The Medical Mission which is conducted at Menouf under Dr. A. R. Hargreaves, principal medical officer, has suffered some diminution in the extent of its work during the past two years, due partly to the increasing numbers of doctors practising in the country towns and in the villages, and partly to the increased facilities for travelling to Cairo. On the other hand, the lessened wealth of the peasants has had an adverse effect on the mission work. The hospital at Menouf has accommodation for 40 in-patients and there are out-patient dispensaries at Ashmoon, Bei el Arab, and Shubra Zanza.

MACKIE'S CHARCOAL BISCUITS.

CHARCOAL biscuits may often prove a useful adjunct to the treatment of certain well-known affections of the stomach and intestines. We have received from Messrs. J. W. Mackie and Sons, Ltd., purveyors to His Majesty the King, a sample of their biscuits, which they state are made from the purest vegetable charcoal. These biscuits are entirely free from grit and are just sufficiently sweet to make them pleasant to the taste.

MOTOR-CARS FOR DISABLED PERSONS.

IN collaboration with Captain Richard Twelvetrees, Messrs. G. W. K., Ltd., of Maidenhead, have recently introduced one of their standard light car models converted to hand control. We are informed that after extended tests both in traffic and under ordinary touring conditions, it is found that the car can be handled with comfort and safety; apart from the alterations to the controls the chassis mechanism is standard. The form of friction drive which has been used on this make of car for many years is said to lend itself well to the needs of the disabled driver, for there is no danger of missing the gears. The alteration to the mechanism consists in pivotting the steering column at its lower end, so that to get a free engine the driver has only to pull the steering wheel slightly towards him. A continuation of the movement applies one of the brakes, and it is said that at a speed of 48 miles an hour the car can be brought to a standstill within a distance of 40 yards by the use of the steering wheel brake alone. A very slight pressure on the wheel releases the drive sufficiently to enable the driver to alter the gear ratio by the usual form of side lever and a second brake is operated by a side lever. Though normally situated at the right-hand side of the driver, the two levers can be located at the left in cases of right arm disablement. The manufacturers are prepared to convert a standard model to suit individual clients with various forms of disablement without extra charge.

The innovation is said to bring motoring within the reach of those who suffer from amputation of one or both legs. We agree that it is desirable that as far as possible disabled persons should be helped to lead a normal social life, and that adjustments of mechanical contrivances to this end are of great value. There is, however, another side to the question, that of the public safety. In view of the fact that a licence to drive does not necessarily imply ability to do so, it would be wise of any disabled man to submit himself to some recognised test and acquire a certificate of competency before taking the road. If this precaution has been taken any accident which may occur will not be regarded as a reflection on his power of controlling the machine.

SMALL-POX INOCULATION IN 1760.

Although it is known, in a general way, that inoculation for small-pox was performed in the eighteenth century, it is not often that contemporary mention of the practice is to be found, and therefore considerable interest attaches to a couple of old family letters, dated 1760 and 1763, in the possession of Arthur Bowes Elliott, F.R.C.S., of Abergele, in which reference is made to this method of preventing the ravages of the disease. The Bowes family were for generations doctors in Richmond, Yorks, and neighbourhood, and the inoculation described in the following letter was doubtless performed on Mr. Bowes's apprentice for the sake of example :—

> " Bedale, Feb. 25th, 1760.
>
> " Now at last I have written to you, as I know you will be very inquisitive to know how Affairs go about our Inoculation, you must know we are to begin to prepare tomorrow for the first Time in Earnest, and then we are to have a Water* podish twice a day, and more Puding than any of us wish for, but however I am resolved to go thro' : with it, tho' it be at the Expe'ce of many a Hungry Belly.
>
> Mr. Bowes's Apprentice and his Sister were Inoculated on Monday the 13th Inst., and have just heard the Small pox were coming out yesterday, but have not heard anything to day but will let you know on Saturday. I assure could wish you for my Nurse, tho : I almost despair of that Favour, however I know you'll wish me well, and that will contribute a good Deal to my Recovery. I am, dear Coz., yours to command
>
> Willm. Prest."

Letters from a young lady in Richmond, Yorks, have frequent references to the small-pox being all round her in 1762–1763. On Oct. 30th, 1763, speaking of a Dance there, she says :—

> " Mrs. M. and Mrs. S——, has never had the Small Pox and some of the Company had them in ye Family, so that I fancy the Ladies was in parties. Inoculation has had great Success, and Miss W——r had no appearance so that it shows all Constitutions are not liable to take them." . . .

Dr. Kenneth Rogers, to whom we are indebted for the letters, adds : " The frequent mention of the small-pox (always used correctly as the plural of Pock), as an *inevitable* disease—e.g., such a reference as ' I wish Mrs. So-and-So's little folks were through them,' is of interest in these days when the *anti*-vaccinators are loud in the land ! "

EATING WITHOUT FEARS.

Cookery books are many and of varying excellence, and it is always a pleasure to us to know that one of the best was written by a member of our own calling—namely, the " Cook's Oracle," by Dr. William Kitchiner. The philosophy of dining has been set forth by many great writers, notably George Meredith and Thackeray, the former of whom wrote : " If it be a distinct point of wisdom to hug the hour that is, then does dinner amount to a highly intellectual invitation to man, for it furnishes the occasion ; and Britons are the wisest of their race, for more than all others they take advantage of it. In this Nature is undoubtedly our guide, seeing that he who, while feasting his body, allows to his soul a thought for the morrow, is in his digestion curst, and becomes a house of evil humours." As for Thackeray, it is unnecessary to do more than mention his " Memorials of Gormandizing," and the inimitable Fraser paper entitled " Barmecide Banquets with Joseph Bregion and Anne Miller." Mr. Scotson-Clark has recently published just such a book[1] as would have delighted either of the above-mentioned authors. We do not agree with him on one or two points—e.g., it is a mistake to say that cream is very fattening (p. 27) and to cook kippers by warming them through in a frying-pan with a little water is anathema (p. 45). Kippers should always be either grilled, or best of all done in a Dutch oven, a cookery armament which we are glad to see Mr. Scotson-Clark praises. With these exceptions the book is admirable, though we contend that larks are much too fascinating and too valuable to the agriculturist to be eaten. Mr. Scotson-Clark is not afraid of garlic, which too many modern housekeepers shy at ; also he lays stress upon the fact that curry to be good should always be made from fresh meat. His recipes for spaghetti and risotto are perfect, and also his directions for cooking poultry. Chapon au Mais is a dish known to few and an excellent one at that, and we will add one of the same kind —namely, a medium-sized tender fowl, stuffed with flavoured rice, i.e., rice to which pepper, salt, butter, and a trace of garlic has been added. This is to be placed inside an ordinary yellow melon from which the seedy interior has been removed and some veal stock added. The lid of the melon is replaced and tied on with string and the whole is then baked in a slow oven for one and a half hours. On curries and soups Mr. Scotson-Clark is equally good. We can only add that to read his book makes the reader hungry, and hunger connotes health.

ARTIFICIAL RESPIRATION.

Captain G. R. G. Fisher, who is an instructor in first-aid in Omaha, Nebraska, and has also done similar first-aid work in this country, has written a little manual[1] which conveys some useful instruction in letterpress and pictures. It is designed especially for those who are employed in industrial or mining works, and for policemen and firemen. The style of writing is likely to make a greater appeal to American than to British readers.

DIABETES TREATMENT CHARTS.

We have received from Messrs. H. K. Lewis and Co., Ltd. (28, Gower-place, London, W.C. 1), a specimen copy of a new chart designed by Dr. O. Leyton for use in the treatment of diabetes. The chart is arranged for recording in graphic form the dosage of insulin, the constituents of the diet in grammes and calories, and the progress of the case as shown by the body-weight and the percentage of sugar in the blood and urine. The price of the charts is 25 for 2*s.*, or 100 for 6*s.* 9*d.*

EYESIGHT IN INDUSTRY.

A study,[2] emanating from the office of the League of Nations, has for its object to encourage further research into the problems of industrial lighting, to disseminate knowledge of the principles involved, and to enlist the coöperation of employers, and workmen's organisations in putting these principles into practice. After defining units of illumination and describing different methods of photometry, the pamphlet classifies and compares the different sources of artificial light. With regard to their effect on the eyes of the worker, the main stress is laid not in the kind of light, but on its position on globes and reflectors, and on the relative amount of illumination necessary for different occupations. The physiology of vision is touched on so far as it is concerned with visual acuity, light and dark adaptation, and the various reflexes in which different parts of the visual apparatus are concerned. A correct summary of the present state of our knowledge on the effects of the invisible rays on different parts of the eye is given ; there is a useful chapter on industrial accidents arising from defective lighting and another on prevention of eyestrain and protection of the eyes by glasses. It will be seen that the brochure covers much ground in a short space. A useful bibliography is appended. The only slip we have noticed is the curious repetition of the word " pupils " for " eye-lids " in three separate places.

VASECTOMY INSTEAD OF CASTRATION IN LIVE-STOCK.

To the Editor of The Lancet.

Sir,—In a recent issue of the *Overseas Mail* reference is made to an experiment about to be undertaken by Dr. Serge Voronoff, whereby he hopes to evolve a permanent new breed of heavily clad animals. This refers to an experiment on sheep to provide more wool. Now, as a matter of fact, I have been urging vasectomy in Cape Colony for this purpose for the last 14 years (*Agricultural Journal, Cape*, August, 1909), but without much progress. In October last Mr. du Toit, Director of Veterinary Education and Research, Pretoria, kindly undertook an experiment with vasectomy, treating six lambs and setting aside controls. The other day he sent me a report in which he says : " It is too early yet to give a final verdict on the result of the small experiment conducted by us, but it would appear as if the method is of real practical value to the sheep farmer." The same department informs me that the procedure is easily carried out at the rate of 30–40 per hour. Veterinary surgeons admit the theory but demur at the difficulty of the process, which must, however, be faced if 16*s.* extra wool and 40*s.* more beef is produced per unit in flocks and herds. As regards the sexual impulse, if vasectomy is performed shortly after birth the sexual arc is broken, the centre atrophies, and the animal is quiet and manageable. I understand that at one time hearse horses in London were so treated and proved useful animals. We may suppose that the germ function being in abeyance, the Sertoli cells receive more nutriment and thus create more wool and vitality in the animal.

I am, Sir, yours faithfully,
W. Robertson.

Mossel Bay, South Africa, Feb. 19th, 1924.

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* ? Possibly a corruption of potage. From the context it would appear to be some " slop " diet.

[1] Eating without Fears. By G. F. Scotson-Clark. London : Jonathan Cape. 1924. Pp. 208. 3*s.* 6*d.*

[1] A Manual of Artificial Respiration. Boston, Massachusetts : The Stratford Company. Pp. 80. $0.75.

[2] The Protection of Eyesight in Industry : Problems of Industrial Lighting. Geneva : International Labour Office. Pp. 158. 2*s.* 6*d.*

Some Questions

CONCERNING THE INFLUENCE OF TROPICAL CLIMATE ON MAN.

An Advanced Lecture in Hygiene delivered under the Auspices of the University of London

BY DR. C. EIJKMAN,
PROFESSOR OF HYGIENE AND MICROBIOLOGY, UNIVERSITY OF UTRECHT.

IT has been complained, and not without justice, that between the tropics the fertile regions are unhealthy and the healthy ones sterile. It is, indeed, the high temperature and the moisture combined that, especially along the coasts, not only cause the luxuriant growth of plants, but also give rise to a number of originators of disease, and, moreover, exercise directly an exhausting and enervating influence on man. In comparison with former times, however, a considerable improvement is noticeable in the general sanitary condition of tropical countries, though it is not always possible to express it in figures. Their proverbial unhealthiness for the white man has lost much of its terror, since it is no longer for the greater part the scum of European society from which the immigrants are recruited, and since the conditions of living there have so much improved, with better medical aid and sanitary measures more amply provided for. No wonder that the pessimistic criticisms of yore have already undergone a considerable change and are even in a fair way to be replaced by rather too optimistic views.

Malaria, yellow fever, cholera, dysentery, plague, beri-beri, ankylostomiasis, those scourges of the tropics, are all, it is argued, avoidable diseases—avoidable, because science has discovered their causes and thus provides the means of combating them with success. Well, then, take them away, those diseases with their causes, and there will remain the healthy inhabitant of the tropics, the "permanent summerman" (Stokvis).

A great deal has been attained in this respect, but, on the other hand, it must be acknowledged that in practice many difficulties have cropped up, some of them quite unforeseen and some of them as yet insurmountable, and even if one succeeded in closing Pandora's box entirely all would not be gained. Health is not a mere negation of illness, it also implies something positive. The full use and control of the mental and physical functions, a vigorous constitution, a considerable amount of bodily well-being—those characterise the healthy man. Much of this the sojourner in the tropics lacks, though he may be exempt from illness. This especially applies to the white man, and the consolation that he is a "permanent summerman" cannot make up for this deficiency.

What at once strikes every one who arrives in tropical regions for the first time is the pale complexion of nearly all the whites. It is such an ordinary phenomenon that people who have resided in tropical climates for some time hardly notice it. To them, however, the newcomer with his fresh colour is a striking appearance. It is not long, however, before the blood has disappeared—usually within a year—to be replaced by a pale complexion, which is often yellowish, owing to pigmentation. This change was generally considered a sign of the development of the so-called *tropical anæmia*. In the absence of duly equipped institutions for experimental research in the tropics, people formerly—and occasionally even now—held this more or less a priori view of the physical changes that take place in the inhabitant of cooler regions. His former surroundings, it was argued, and his consequent natural disposition and organisation rendered his metabolism, heat production, and physical powers vigorous, the action of his skin, however, being often comparatively slight. His transference to the hothouse atmosphere of the tropics must work a complete change in that organisation in those functions. In other words, his body must undergo a process of acclimatisation if he is to adapt himself in the long run to surroundings so entirely different. When, to find an outlet for the body heat, his skin reaction has increased considerably and the sweat secretion has augmented to superfluity, he will gradually adjust himself to a limited production of heat. Not only is muscular action, the source both of mechanical force and of heat, avoided as much as possible during the hottest part of the day, not only does the metabolism become less intense and the need of food less urgent through the absence of the stimulus of the cold, not only does the breathing become less deep and conduct less oxygen to the blood, owing also to the rarity and humidity of the hot air, but the composition of the blood, too, is modified accordingly; it becomes thinner and paler. Or, as a French author (Saint-Vel) has it: "L'européen ne tarde pas à offrir le léger degré d'anémie qui semble physiologique tant il répond aux conditions de la santé sous ces latitudes. Il n'a plus besoin d'un sang aussi riche et d'une respiration aussi active; il n'a plus à produire une aussi grande somme de calorique pour résister à un climat rigoureux; il n'a qu'à s'accommoder au nouveau climat et à s'y laisser vivre en quelque sorte."

Such was the generally accepted meaning of the supposed anæmia and the lessened vital power of the white sojourner in the tropics. He is enabled to endure the heat better, not by active resistance, but by a passive adaptation to it. Thus, according to the line of thought set forth here, the acclimatised white is a weakling, doomed to lead a languishing existence, an inferior person whose health is in a state of unstable equilibrium amid the many noxious influences to which he is exposed in the tropics. As a French naval doctor (Laure) expressed himself already 60 years ago: "En arrivant à Cayenne, on croirait tomber dans la cour d'un hospice." What a contrast with the native! According to the accepted notion, his pigmented skin, in its power to radiate heat, surpasses the white's so much that neither a frequently excessive, but at the same time debilitating secretion of sweat, nor a considerable diminution of the heat-producing vital functions is required to preserve the equilibrium of heat. So that in contradistinction to the white, who in the middle of the day seeks rest and shelter from the sun, he can remain in full activity. With him, therefore, there is no question of anæmia, of considerably diminished vital energy, of enhanced liability to morbific influences.

So much for the theory. It must be acknowledged that, since in this connexion physiological deduction has given way to experimental research, our notions concerning the influence of the heat on the constitution of the sojourner in the tropics has had to be rather considerably modified. In the Dutch East Indies this research has become possible through the establishment, more than 30 years ago, of the medical laboratory at Weltevreden (a suburb of Batavia), of which I had the honour to be the first principal.

It will be clear, after what I have said, what are the problems we have proposed to ourselves and selected for research. I flatter myself that the results of these investigations are still of sufficient interest to be stated here, the more so because in my perusal of the English literature on the subject it has appeared to me that they have remained all but unnoticed in this country.

TROPICAL ANÆMIA.

Is the pale complexion of the white sojourner in the tropics a symptom of anæmia? Almost simultaneously with and independently of us, two other investigators put this question to themselves—viz., the Frenchman, Marestang, and the Dutchman, Van der Scheer. A count was made of the red blood cells per volume-unit of the blood, as also a colorimetric determination of the hæmoglobin content. Both were found conformably by the three experimenters to lie within the same limits for the white sojourner as in the case of the newcomer and of the native. It stands to reason that for these experiments persons were chosen who might be considered healthy, though the first group looked pale. Later on these investigations were extended in the Weltevreden Laboratory to the specific weight and the water-content of the blood as well as of the plasma, again with the result that no differences could be detected. The same may be said with regard to the osmotic tension. Nor was there any evidence of micro- and poikilo-cytosis, as will occur in anæmic conditions. So the above question, whether the pale complexion is a symptom of anæmia, must be answered in the negative.

Besides, we had an opportunity to make observations in a couple of cases on the regeneration of the blood after acute traumatic hæmorrhage. The first case concerned a Dutch sergeant, 32 years old, who had been in the Indies for three years and a half, and who, in an attempt at suicide with a razor, had inflicted a deep wound on the front of his neck, cutting one of the thyroid arteries. I did not get an opportunity of examining him till a fortnight afterwards. The number of red blood cells amounted then only to 3,620,000 per c.mm., the hæmoglobin being 72 per cent. An examination repeated every ten days showed that the first had returned to the normal 34 days after the loss of blood and the other 44 days after it.

The second case was that of a Dutch soldier, 25 years old, four months in the Indies, who on going outside one morning before sunrise happened to fall on a splinter of glass, which penetrated deep into the right side of his neck, just above the collar-bone. About an hour after the accident he was found lying unconscious in a pool of blood. I had the opportunity of examining him on the next day. It appeared that the right truncus thyreo-cervicalis (a. clavicular) had been severed. The red blood cells amounted to 3,162,000, and the hæmoglobin was 60 per cent. In determining the relative volume of the aggregated blood cells it was also found that about 40 per cent. of the blood must have been lost. Notwithstanding this he looked rather ruddy, another proof how one may be mistaken in judging the condition of the blood by appearance only. The specific weight of the blood was 1·046 (normal 1·058), that of the blood-plasma 1·027 (normal 1·029). The weekly repeated examination showed that the loss had been completely restored after seven weeks.

In comparing these results with the statements in the literature on the subject, one gets the impression that the regeneration of the blood after a great loss is not less complete in healthy white men in the tropics, nor markedly slower than in the temperate climate. All things considered, *there exists no purely physiological anæmia of hot countries.*

It might be thought that the pale complexion was due to a diminution of the total mass of the blood (oligæmia). Methods, such as those of Zuntz, Haldane, &c., to determine this mass in vivo were not yet known at that time, and in that direction, therefore, the investigation might be extended. However, I do not expect much from this, partly because these methods are not yet very exact, partly because neither clinical nor post-mortem observations indicate that the vascular system has suffered in this way. Notwithstanding the pale complexion, the pulse is fairly well-filled, the blood pressure not lowered, and the internal organs do not give the impression of a paucity of blood. It is even the current impression among tropical practitioners that the abdominal organs are overfilled with blood, seeing the pronounced liability to diseases of these parts, often attended with bloody excretions. In this connexion Van der Scheer calls attention to the experiments of Dastre and Morat which have brought to light an antagonism between the blood-vessels of the bowels on the one hand and those of the muscles and skin on the other. This would seem to account, not only for the paleness of the sojourner in the tropics, but also for his sensation of weariness and disinclination to physical exertion. To me all this seems too hypothetical, ingenious though it may be, and I think the explanation is to be sought in another direction, although it is rather an analogy than an explanation that I offer. In the cooler regions it is only the regularly uncovered skin, directly exposed to the influences of the weather, that is generally distinguished by richness of blood; this ruddiness is a local phenomenon. The covered skin, on the contrary, is usually pale and—this is the analogy referred to—may be said to be in an artificially tropical climate with a temperature amounting as a rule to more than 30° C. The same parts of the skin that are usually red in the cool climate, with its strong variations of temperature, in course of time assume a pale colour when they are almost continually in warm surroundings. Nor does the skin of the face form an exception in this respect. We need only call to mind the pale complexion characteristic of people who lead a sedentary life. In these cases, too, as Sahli and Oppenheim have demonstrated beyond dispute, this need not at all be an indication of general lack of blood.

Finally, I wish to point out that in the Malay race, too, examples may be found of fresh complexion, though tempered by the skin pigment. I saw this not only in Holland but also in the mountains in Java and Sumatra, and I remember very well—I was then so many years younger—that it made the young native girls there look exceedingly pretty. In the hot littorals, on the contrary, the skin of the native's face is also anæmic, although nobody will consider this as a symptom of general anæmia, as has been done in the case of the white.

Metabolism and Heat Production.

In tropical countries the aborigines live chiefly on vegetable food, which is ordinarily rich in carbohydrates, comparatively poor, however, in proteins, and often also in fat. In my time rather extensive investigations were made in the Weltevreden Laboratory into the food both of Europeans and Malayans. Each of the subjects of experiment furnished us for four days successively with a sample of his daily ration for analysis, and the urine and fæces were also examined.

The following is a summary of the results :—

—	Body-weight.	Protein.	Fat.	Carbo-hydrates.	Alcohol.	N. in urine.	Calories.
	kg.	g.	g.	g.	g.	g.	
8 Europeans	65·4	99·6 (88·6)	83·8 (94·4)	264·2 (97·0)	28·5	13·45	2471
5 Malay students ..	49·6	73·3 (76·1)	30·2 (83·0)	471·9 (97·7)	—	8·74	2512
4 ,, servants ..	47·5	67·7	21·8	484·6	—	8·45	2465

N.B.—The figures in parentheses indicate the percentage of utilisation.

The difference between the two races as regards the protein and fat content of the food is obvious. With the Europeans only 25 per cent. of the protein was derived from vegetable food, with the Malayan 70–80 per cent. I am not so sure that this is due to instinctive compliance with the requirements of the climate, for we see the same thing in the Japanese, who is not really an inhabitant of the tropics. Owing to the relative cost of animal food, economic causes may be at work here similar to those which elsewhere compel the poor to become vegetarians. Indeed, on festive occasions the Malayan is by no means averse from animal foods and from fat (cocos oil).

From Rubner's standpoint, that the organic foodstuffs can interchange in isodynamic proportion, it is to some extent immaterial from which of them the body derives its necessary energy. On the other hand, however, we should take into account the specific dynamic action of protein, which manifests itself by an increased heat production above the basal level. Moreover, according to Chauveau, in the performance of muscular work the metabolism of fat causes a greater part of the liberated energy to be converted into heat than the metabolism of carbohydrates—a view which tallies better with the experience that a diet rich in fat is more appreciated in cold than in warm countries.

A peculiar view, assigning great value to the source of the fat, has been put forward by Körfer. He even proposes to distinguish the three zones, into which climatology divides the surface of our planets, as train-oil zone, suet zone, and vegetable-fat zone.

Finally, some medical men, obsessed by the dogma that a substantial food must needs be rich in protein and fat, have advocated its wholesomeness for the tropics as well, overlooking the fact that whole nations and working classes can develop well and live healthy lives on a minimal consumption of animal food. They would force upon the indigenes an unusual diet, prepared after European recipes, specially with a view to the prevention of beri-beri. But both in the Dutch East Indies and in Japan these efforts to effect a radical change in the diet of soldiers and sailors have failed; there is no forcing the taste after all.

Returning to our figures after this digression, we want in the first place to point out that the utilisation of the various foodstuffs for both groups of subjects was very satisfactory. The caloric value of the average daily ration amounts for both groups, in round numbers, to 2500 calories. Our European subjects (hospital and laboratory doctors, men nurses) fall under Rubner's first category of labour (light labour), for which he allows 2630 calories per 70 kg. of body-weight. Calculated for the same body-weight there results for our European subjects $\left(\frac{70\cdot0}{5\cdot46}\right)^{\frac{2}{3}} \times 2500 =$ 2590 calories. In the same manner the calculation gives for our Malayan subjects 3140 calories. They approach more nearly to Rubner's second category (medium labour), for which he allowed 3120 calories. So our findings for both categories accord pretty well with Rubner's and confirm what Voit, solely judging from information that had reached him about the food supply in hot climates, had already stated as his impression years ago, *the food requirement is, with about similar labour conditions, as great in hot as in temperate climates.*

Nevertheless, since muscular work and the consumption of food influence metabolism to an extent which cannot be estimated with sufficient accuracy, it was advisable to exclude them. As is known, the usual method for this is the determination of the respiratory gas exchange in the morning hours before breakfast in persons at complete rest. From the amount of oxygen consumption, taking into account also the respiratory quotient, the basal metabolism is calculated—i.e., the number of calories produced per hour per square metre of body surface. We found, both for the white and the coloured race, an average of about 40 calories, which corresponds entirely with the figures given by other investigators for mean Europe and for North America. On the other hand, Ozorio de Almeida in Rio de Janeiro gives considerably lower figures for both the white and coloured races. In support of mine I may add that my own basal metabolism, examined in winter in Holland in a room temperature of 9° C., appeared to be the same as it had been two years before in a temperature of 27·5° C. in Batavia. The opportunity of making such a control experiment on the same person will naturally remain exceptional, hence, after my return to Holland, I made comparative determinations of the basal metabolism in ten persons in summer- and in winter-time. Here, too, no essential differences could be noticed, though, with about the same clothing, the difference in room temperature was very considerable (16° C.).

I readily admit that when in Batavia I started the investigations described here, I had not quite expected these results, and I was inclined to share the view that the heat production would be lessened under the influence of the hot climate. Not that I believed in what I would call the "bellows theory," the conception that the combustion in the body might be compared to that of an open fire, which burns the more fiercely the more air is conveyed to it. There is no doubt whatever that though in a cool environment more oxygen were to be introduced into the organism than in a hot one, the consumption of it need not therefore be increased. The living organism regulates this according to its requirements, and possesses an excellent compensating mechanism for the purpose. Besides, it should be borne in mind that, even in the coolest and driest atmosphere, before the air has reached the lung cells, it has already been heated within the air passages to body temperature and saturated with vapour. Nay, in ordinary, quiet respiration the inhaled air does not even stream into the lung cells, but reaches no farther than the air passages, whence the gas exchange with the lung cells is brought about by diffusion. So it is never the outside air as such that is directly concerned in the gas exchange in the lungs, but always warm and moist air—no matter in what climate or season.

What suggested to me the occurrence of a less vigorous metabolism in a hot environment was the experiments on animals made by the school of the famous physiologist Pflüger, who concluded that it is the stimulus exercised by the cold on the skin that automatically stimulates the heat production in the muscles, even without necessarily betraying itself by noticeable contractions (so-called still labour). A second consideration for me was the following: The calculation of the basal metabolism starts from the experimental datum that the heat production is proportional not to the weight but to the surface of the body. In this was seen a confirmation of an already old hypothesis, advanced first of all by Immermann and by Helmholtz, that in warm-blooded animals there is a close relation between the intensity of the metabolism and the development of the body surface—that is to say, that smaller individuals with their relatively larger surface lose more heat per kg. body-weight than larger ones, and must produce more accordingly. Assuming this explanation to be true, it would follow that the heat production regulates itself automatically after the heat loss. If this were so, one might expect a direct influence of climate and season on metabolism and heat production. However, it has appeared since, among other things from investigations by my countryman Buitendijk, that the relation between metabolism and body surface not only holds good for warm-blooded animals, but also for cold-blooded ones, so that the explanation just given can hardly be true.

Thus, rather contrary to expectation, we could not bring to light any real differences, as regards metabolism and heat production, either between a cool and a hot area, or between the white and the coloured race. However, our results only referred to the state of bodily rest, as also to light muscular work of the whites, and moderate work of their Malayans. Now, it seems a general experience that the white cannot in the long run keep on doing heavy muscular work in the tropics; he must leave it to the natives.

I had intended to extend my investigations of the metabolism in that direction, but had no opportunity, owing to my return to Holland. I was then able only to determine the respiratory gas exchange of a couple of white subjects during rather heavy labour and at room temperatures varying from 12° to 30° C. The investigation lasted from the month of March to the middle of July. My subjects, trained cyclists, were seated on a stationary bicycle arranged as an ergometer, so that by the pedalling motion a measurable and dosable resistance was overcome. The tempo of pedalling was given by a metronome and amounted to 130, the labour performed to

380 kg. a minute. The determinations of the gas exchange were made after 20 minutes' pedalling. At the conclusion the subjects, though not exhausted, felt tired, just as if they had taken a rather long bicycle ride. Now, in contrast with what had been found for the state of complete rest, it appeared that the temperature of the environment, as soon as a certain limit upward is surpassed, exerts a decided influence on the gas exchange. This limit in both subjects was reached at 21°–22° C. The average oxygen consumption above that limit increased for the one by 31 per cent., for the other by 48 per cent. The carbon dioxide production ran pretty well parallel with it, so that the respiratory quotient remained about the same. The respiration volume, too, increased, though in a less degree.

Consequently the labour is performed less economically, and this contributes to our getting so much sooner fatigued in the heat.

HEAT REGULATION.

As we have seen, there is, according to our findings, in a hot environment practically no question of an automatic limitation of the heat production—in other words, of a *chemical* heat regulation. Almost the only thing that has any effect in this respect is an adequate limitation of the muscular labour. For the rest, it is for our body to regulate the heat loss which is effected chiefly by the skin and the lungs, and that in such a way that it may be appropriately called *physical* heat regulation. The lungs hardly take part in this; they yield less heat to a warm, moist atmosphere than to a cold one, and one does not get the impression that during a man's labour in the heat the ventilation of the lungs increases in such a degree that there may be a question of compensation, as is so clearly seen in some animals—e.g., dogs. We may, therefore, confine ourselves to the heat-regulating function of the skin, and it is essential to examine whether the white is in this respect inferior to the coloured skin. In this connexion we shall have to consider the three ways in which the skin yields up the body heat—viz., radiation, convection, and perspiration.

The skin is protected by its pigment against the inflammatory action of the sunlight; at the same time, however, the coloured skin absorbs more heat than the white one, which reflects a greater part of the sun's rays. Of two identical thermometers the bulb was covered with a double layer of skin, with the difference that in the one white skin was over brown, and in the other just the reverse. Both thermometers were placed then in a closed humid space, irradiated equally by the sun. After some time the thermometer with the white skin outside had risen to 47·5° C., that with the brown outside to 50·1° C. A similar difference may be observed by merely touching the living skin, after the sun has for some time shone on it. On the other hand, it might be that the dark skin radiates the body warmth more easily. The much-quoted author Woodruff remarks in this connexion: "Black bodies radiate heat to cooler ones much faster than bright bodies do. Blond men can stand cold far better than the negro, who radiates so freely that he needs more clothing and warmer houses. The inability to radiate heat makes the white man suffer from overheating in the tropics, his temperature rising with that of the air."

This assumption of Woodruff's seems to me to be a physical heresy. The colour of an object has no influence on the emission of dark heat rays. Provided the surface be the same, the radiating power of white lead is equal to that of soot. We also found it the same for white and brown skin. The experiment was made as follows: Two entirely uniform tin boxes had their cylindrical surface covered with a double layer of skin in the same manner as the thermometers mentioned a moment ago, while the flat bottom and lid were clothed with a thick heat-insulating felt layer. Both boxes were then filled with water at 45° C., and the cooling of the water was read from the thermometers inserted in the boxes. Care was taken that no cooling was caused by air currents or by evaporation. The result of repeated experiments was that the two boxes—one with the white, the other with the brown skin outside—cooled equally in equal times. Consequently, there is no perceptible difference in radiating power between dead white and dead pigmented skin. There is no valid reason why it should be otherwise with the living skin.

This does not mean that there might not be in any other respect a difference in heat radiation between the two races. In treating of the basal metabolism we came to the conclusion that in the given circumstances the heat production per square metre is the same for the two races. Therefore, this must also be the case with the heat loss. This takes place in the three ways already mentioned, which are interdependent in such a way that the total amount remains the same. To mention an example, abundant perspiration must occasion a diminution of the heat loss by radiation and convection, and vice versa. I have found that in this respect there is really a difference between the two races. In order to make a fair comparison possible, parallel experiments were always made, and with the avoidance of anything that might modify the conditions of heat loss prevailing in ordinary circumstances. The subjects, airily dressed, were in rest during the experiment. We started from the consideration that, if the evaporation of the sweat through the thin, porous clothing of the parts of the skin to be examined could take place in a normal manner, a difference in heat emission by radiation and conduction must betray itself by a difference in the temperature of the air between the skin and its covering. I desist from describing the further arrangements of the experiments, which involved a great many more precautions. A summary of the average results may suffice here.

Temperature of the Air underneath the Clothing.

—	8 A.M.	10½ A.M.	1 P.M.	5 P.M.
	°C.	°C.	°C.	°C.
8 Malayans	32·5	33·4	33·5	33·5
8 Europeans	32·3	33·1	33·2	33·1
Difference	0·2	0·3	0·3	0·4
Room temp.	25·7	27·3	27·8	27·4

The axillary temperature, averaging 36·7° C. in the morning for both groups, rose in the course of the day to 37° C. in the Malayans and nearly 0·1° higher in the whites, a difference which I observed regularly between the two races.

As regards the temperature of the air underneath the clothing just the opposite obtains. The differences are small—they range from 0·2 to 0·4° C.—but they were observed so constantly, also in other experiments than those recorded here, that there is no doubt of their validity. Each time, too, it appeared that the difference became smaller the lower the temperature and the moistness of the air in the room, and would even disappear altogether at 25° and lower. In the experiments recorded, where the room temperature varied from 25·7° to 27·8°, a difference between the two races of 3–7 per cent. in heat emission by radiation and convection may be estimated to answer to the differences of 0·20°–0·4° found in the temperature of the air underneath the clothing. In a higher room temperature they can be much more considerable—e.g., 14 per cent. at 32° C.

As has been observed before, it would follow from the preceding that conversely the heat loss by evaporation of sweat in the Europeans must surpass that in the Malayans. Of course, this could be ascertained by determining the body-weight just before and after the experiment. It is clear that, when under similar conditions in an equal lapse of time a marked difference in loss of weight is found between two subjects, it may for the greater part be put down to an unequal evaporation of sweat.

We found the following average results of 27 parallel experiments lasting 75 minutes each. To make a more reliable comparison possible the subjects had been chosen in such a way that the average body-weight of the two groups was about the same. On an average the European weighing 57·4 kg. lost in moist still air of 32° C., 114 g. per hour; the Malayan, weighing 55·6 kg., 84 g. by perspiration.

Perspiratio Insensibilis.

—	Room temp.	Temp. underneath clothing.	Arm-pit temp.	Body-weight.	Loss of weight.
	°C.	°C.	°C.	kg.	g.
Europeans ..	32	34·6	37·1	57·362	143
Malayans ..	32	35·0	37·0	55·610	105

The difference of 30 g. per hour corresponds to a greater heat loss by evaporation of 16 calories, or just as many per cent. of the total heat loss, if we put this at 100 calories per hour. On the other hand, the Europeans show a smaller loss by radiation and convection, of which there was question just now, and which was estimated at 14 per cent. It goes without saying that this is rather a rough estimation, but our impression remains that the conclusion already arrived at is confirmed, or at least not contravened.

The question now arises whether the white man must evaporate more than the coloured one, because it is more difficult for him to get rid of his body heat by radiation and convection, or is the causal nexus just the other way? I think I can show that the latter is the case. The primary fact is that the heat stimulus incites the sweat secretion in the white more than in the coloured man; hence he perspires more, and consequently gives off less heat by radiation and convection. Yet his sweat secretion far too quickly goes beyond the limits of a rational heat regulation and becomes superfluous. A great part of it does not evaporate, the skin and the clothes become moist. With the Malayan this happens in a far less degree; so long at least as he is at rest he remains pretty dry to the touch, where the white already bathes in sweat. Accordingly, the latter, and especially the newcomer, has much to suffer from lichen tropicus, or so-called prickly heat, a troublesome, itching skin affection, from which the native seems to be exempt.

It is a priori not likely that the sudorific apparatus of the inhabitant of cool countries should be more developed than in the native of the tropics. When we commenced these experiments we were more inclined to suppose the opposite, and made an investigation at the time, which may perhaps be recounted, because of the simple and effective method in which it took place.

After the portion of the skin where the sweat glands are to be counted has been duly shaved, if necessary, and washed with ether and alcohol, it is coloured over a surface of about 20 sq. cm.—e.g., 4 by 5 cm.—with an alcoholic solution of fuchsin. As soon as the skin has become thoroughly dry, which may be accelerated by fanning, a piece of thin note-paper is laid on it without folds, keeping it in position by means of a moderately pressing flannel bandage. After some minutes the paper is taken off, and it will be found to be covered with red spots: the imprints of the sweat orifices. Wherever the paper is dry, indeed, the fuchsin does not come off; but as soon as there appears a drop of sweat from an orifice it dissolves some of the dye and leaves a red spot on the paper. The counting may be facilitated by the use of squared paper, and requires the observation of the same rules as in counting blood corpuscles.

We examined two Malayans and three Europeans. The average values for the various parts of the body are given in the following table:—

Number of Sweat Glands per sq. cm. Skin Surface.

—	Skin on—	Malayans.	Europeans.
1	Palm hand.	299	298
2	Glabella.	171	172
3	Instep foot.	151	175
4	Forearm (extensor side)	160	146
5	Forearm (flexor side)	162	166
6	Upper arm.	161	162
7	Thigh (extensor side).	135	141
8	Calf.	123	118
9	Back.	122	138
10	Manubrium sterni.	120	117
—	Average	160	162

Taking also into account the individual fluctuations among the same race we may conclude that there is no perceptible difference between the two races in the number of sweat glands.

Even taking his smaller body-weight into account, the Malayan as a rule imbibes less water with his food and drink than the white sojourner in the tropics. Now it might be thought that this was essentially the cause of the difference in sweat secretion. This may be true to some extent, but it does not account entirely for it, as is shown by further comparative perspiration experiments. In one of these, lasting three hours, all the subjects were given at the beginning 200 c.cm. water to drink. Then, after emptying the bladder, they were weighed. They now remained at rest in a room temperature of about 30° C., after which they were weighed again and passed the urine formed in the meantime. With about the same average body-weight the white now lost 310 g. by insensible perspiration, the coloured men only 248 g. on an average. Yet the volume of urine at the end of the experiment averaged 130 c.cm. for the former, only 56 c.cm. for the latter.

In the subsequent experiments we gave the Malayans a very plentiful quantity of water to drink, while we kept it entirely from the Europeans, except a few who complained much of thirst, and were then refreshed with a little water. Now, as long as the room temperature was not excessively high, we did not succeed in this way in getting rid of the differences between the two races, much less in reversing them. We found, e.g., insensible perspiration in the white 208 g., against 188 g. in the coloured men; volume of urine 180, against 93 g. Not until the same experiment was repeated—only for a somewhat shorter time, viz., two instead of three hours—in an artificially moistened atmosphere heated to 32·5° C. did the sweating increase so much more in the white that his urine volume was a little below that of the coloured one; insensible perspiration 182, against 158 g., urine 110, against 133 c.cm. To this has to be added the unevaporated sweat, the quantity of which, weighed together with the clothing, amounted to more than three times as much in the thirsting white as in the water-drinking Malayan (average 80, against 25 g.).

That the white sweats more plentifully and produces more urine is not, therefore, merely the consequence of his taking more water; the causal nexus is rather the reverse. As compared with those of the natives, his sweat glands and his kidneys show a greater activity, independent to a great extent of the water intake. He must therefore drink more in order to maintain the water content of his body. No doubt the greater activity of his kidneys is to be accounted for by the fact that he has to excrete nearly twice as much nitrogen as the native.

It is remarkable that notwithstanding this the weight of the Malayan's kidneys in relation to his body-weight is not less than that of the European's. At least, we found as the average of 21 determinations, 260 g. with a body-weight of around 50 kg., while for Europe this figure is stated to be 300 g. with a body-weight of about 70 kg.

Acclimatisation.

We have seen that the old notions formed about the process of acclimatisation have as yet not been confirmed by direct investigation. It has not been possible to prove the existence of what might be called physiological anæmia. In a condition of rest and of moderate labour the metabolism, and consequently the heat production, has been found by us to be on the same level in the two races, and not more considerable in a cool climate than in a hot one. In accordance with the assumption that there is a lack of chemical heat regulation, we see the physical one in the hot environment coming very much in evidence.

The chief objectively perceptible difference between the two races consists in the function of the skin. The coloured man is by his pigmentation better protected against the chemical active rays of the sun, and he is not so subject to excessive sweating. Now, in those two respects there can be, in some degree, a question of acclimatisation for the white, though not to such an extent that he can compare with the coloured man. For the rest it would appear to me that the much-discussed acclimatisation consists rather in an external than an internal process; rather in making, by imitation and custom, a second nature of a manner of living more adapted to the climate than in adequate changes of the bodily organisation as such. Hence, let us have no manner of living, no house arrangements and clothing such as tyrannical fashion prescribes in Europe, and which are but too often slavishly imitated in the tropics. Indeed, the native's frugality both in respect to food and drink, his, as a rule, calm, resigned view of life, his rule of *festina lente*, would deserve, *from a purely sanitary standpoint*, to be set as an example to the white sojourner in the tropics; at the risk, however, of his being after all no more in the full sense the pushing power, so necessary for the development of tropical countries. In the meantime, it would be rash to conclude from the results of comparative race physiology that the former pessimistic views ought to be absolutely relegated to the realm of myths, as some, partly on the strength of my experiments, have already done. The latter are, if I may say so with due modesty, "plus royalistes que le roi." Our investigations in the tropics have been limited to the condition of rest or light labour. What would have been the results could they have been extended to heavy labour, and especially of long duration, which makes higher demands on the bodily functions, and not the least on the compensatory actions? Will not, then, the heat regulation in the white prove to be sooner insufficient, and will not the fatigue, the ultimate exhaustion, set in sooner than in the coloured man? Will habituation, adaptation, training, in short, acclimatisation, appear possible then? These questions cannot be answered, as has been done, by postulating equality, even with regard to the climate, on the strength of anthropological theories. Although we accept the unity of origin of mankind, it will remain, no doubt, true for ever that what ages and climate have separated cannot be brought together again at once by an authoritative pronouncement.

It is true the coloured man, too, does not walk under palm trees with impunity; he, too, suffers from the heat; he, too, is, as a rule, studious of his ease. But still, there is no denying that the atmosphere of the tropics, often so windless, so leaden, oppresses him less than it does the white, to whom continuous mental and physical strain can become quite a torture. There are, indeed, instances of whites in the tropics braving fatigues when out hunting or on military marches, although we must not overlook the fact that not a few have fallen victims to these exertions, or that such strenuous efforts were followed by an ample time of rest. This is not the same as continuous rather heavy labour, even during the hottest part of the day, such as is performed by an agricultural population.

It has been pointed out that on steamers in the torrid zone the European stokers are advantageously replaced by negroes and East Indians. Schmidt, on the contrary, found that with the same amount of labour the negroes were not superior to the whites. He could not discover any difference in the increase of body temperature, the pulse, and the respiratory frequency. Hilger, however, found that after labour in an overheated space the body temperature of a negro returned sooner to the normal than that of a couple of whites. And even Schmidt questions whether, as is the case with the native, the white's working power will in the long run maintain itself in the tropical heat, which is after all the principal thing.

What it really is that makes the heat so exhausting we are far from apprehending. The physiology and pathology of fatigue are still a little explored field. By the adoption of toxins as products of muscle metabolism not all cases are explained, ours among the rest; for fatigue in the heat makes itself felt often immediately after waking in the morning, and is often lessened by slight bodily exercise. The state of weariness and listlessness coupled with psychical irritability, to which the European gradually becomes subject in the tropics, has always reminded me of the syndrome to which has been given the name of neurasthenia or nervous exhaustion. So far it would be better to speak of tropical neurasthenia than of tropical anæmia, only we should then easily form an exaggerated notion of it. If no naturally weak nervous system, no mental or physical overstrain, no illness, no aggravating circumstances of a social or moral nature have contributed their share the phenomena are pretty transient; they disappear as soon as fresher air surrounds us.

Colonisation.

The question whether the colonisation of whites in the tropics is possible in the full sense of the term is not one of a purely hygienic nature. Let us leave alone for a moment the great variety of factors which come into play here, and let us see what mere experience teaches. For more than three centuries there has been a continuous stream of thousands and hundreds of thousands of people going from Europe to oversea lands to which Portuguese and Spaniards have shown the way. And the result? Everywhere outside the torrid zone, and in the countries bordering on it, wherever summer and winter alternate, in North America, South Africa, South Australia, Tasmania, and New Zealand, we see the white race, braving all dangers and difficulties, gain a firm footing, pressing back the native, supplanting him.

How different in the hot regions! The thoroughbred white man attains nowhere any further than to an aristocratic minority. Wherever things seem otherwise, as in the lowlands of Mexico, in some West and East Indian islands, it is not they and their pure descendants who form the real nucleus of the population, but a more or less coloured people, the product of cross-breeding, who here and there, as Réclus has it, by a "complaisance du Fisque" have undergone a "blanchissement officiel." Now I do not wish to argue that the mere fact of unmixed white colonies not thriving anywhere in a tropical climate is a proof that for purely sanitary reasons there is no possibility of their so doing. For, indeed, if the viability of the white race in the tropics remained unimpaired, yet the pure blood propagation in following generations would be no more than an exception, with the manifold opportunities for the mingling of the races. One might, for instance, argue with the same justice that Germans in the long run cannot stand the climate here, because, notwithstanding the many immigrants, nowhere in this country has a German colony come into being. Possibly, too, the special aptitude of Jews for colonisation is not so much due to natural causes as to the traditional custom of keeping their race pure and not allowing it to disappear in the multitude. But it cannot be denied that, whereas the white races dominate nearly everywhere in the temperate zone, in the tropics they get no further than a numerical minority, and this proves at any rate that the native race can engage with much more success in the struggle for life, that, therefore, the superiority of the white race is only a relative one. Indeed, where the native population was thin-sown, it has been necessary to import men from elsewhere, negroes, Indian coolies, proof against hard toil in the hot climate, to supply the urgent need of labour.

Now it will not do to say that it is not so much the climate of the tropics as the diseases prevailing there that handicap the white race in comparison with the native one, for the latter has certainly to suffer no less, nay, often more, from them. The enumeration of the efforts at colonisation of the white race in the tropics is a continuous tale of misery. More than 50 years ago a commission appointed by the Dutch Government, of which the celebrated physiologist Donders was the medical member, gave a sad account of it, and since then experiences have not been more encouraging. Not that a fruitless struggle against the adverse qualities of the climate was the only cause of failure. Complaints of bad preparation, a wrong choice of colonists, inefficient management, want of protection and collaboration, if not opposition, on the part of the authorities were the order of the day. But were conditions better elsewhere outside the tropical regions? Were they all picked people of indestructible health, sobriety, working power, and enthusiasm for work, true pioneers of civilisation, those adventurers who went to populate North America and South Australia? And had in these cases provident authorities taken all the precautions necessary for the success of the colonisation; were political and economical circumstances so much more favourable here? To be sure, no. Nowhere has private initiative in colonisation been supported so much by the authorities as in tropical regions, and if, notwithstanding this, complaints such as have just been mentioned are well founded, it proves all the more how exceedingly difficult it has been to establish such a colonisation, how little in accordance with the natural course of affairs, how much to be considered an artificial culture amidst a freely propagating native population.

Will, in a far-off future, under possibly quite different circumstances, the conditions for colonisation become more favourable? It does not seem at all unlikely to me. Technical skill and industry, backed by science, stick at nothing where there is question of assisting man in the struggle for life. If he cannot be made fit for the climate they make the climate fit for him. I need only remind you of the so-called temperate zone, which has only deserved this name since man has succeeded in making himself to a great extent independent of the inclemencies of the climate, in creating comfortable surroundings by means of adequate clothing, the heating of his house, &c. Why is it not possible that the struggle against the heat should lead to a similar result, though more difficult to attain? Refrigeration in and outdoors, a considerable lightening of the task of the labourers by ever more perfected implements, quicker means of communication which reduce weeks to days, days to hours, and all that at such a moderate cost that it can be generally put into practice—to be sure, it is not indulging in chimæras to believe in this possibility in the future. In this light the question of colonisation is in the first place a technical economical problem, the solution of which may be safely left to time.

Whether this solution is desirable, what consequences it will have for the native, those are questions I do not venture to answer. The spirit of the times is not to be checked in its progress, and hygiene, too, must go with the current, trying by reliable information to contribute its share in leading it in the right direction.

A SERIES OF CASES OF TINNITUS AURIUM ASSOCIATED WITH ABNORMALITIES OF BLOOD PRESSURE.

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There are, attending almost every aural clinic, a number of patients who, in spite of having received over a considerable period of time a variety of forms of treatment, nevertheless continue to suffer from severe and intractable tinnitus, which causes them so much distress that their lives are a great burden to them. I have found that the majority of causes of tinnitus are well recognised, and well treated in those cases in which the cause is removable. And in those cases—such as otosclerosis and old head injuries—where the removal of the cause is as yet impracticable, the symptoms are often considerably relieved by bromides in one form or another, or by hydrobromic acid. It cannot, however, be said that bromides are in any sense a curative agent, except in those cases where tinnitus is proved to be due to excessive activity or irritability of the central nervous system as a primary cause. In other cases they merely relieve the symptoms, and in some they do not even do that.

But there is a large group of cases, which, although theoretically recognised by aurists, is not generally treated as an everyday practical problem; and it is this group to which I wish to draw attention, because I have found in it some very severe and distressing types of tinnitus, some of which I have been able to relieve to a considerable extent. I refer to those associated with a blood pressure that is either too high or too low. I believe them to be a great deal more numerous than is usually supposed.

I have dealt with these cases from the point of view of the practical clinician. I have endeavoured to establish a correct diagnosis where other diagnoses had failed, to prove the correctness of the diagnosis, where possible, and to propose a definite line of treatment. I was led to investigate the blood pressure of these patients owing to the fact that they appeared without exception to be of middle age or well beyond. They also appeared to suffer from a degree of tinnitus more severe than is usual in tinnitus from other causes—more severe, in many cases, even than that of otosclerosis. I have divided them into four main groups for purposes of greater lucidity.

Group 1.—*Tinnitus Associated with a Low Blood Pressure.*

Case 1.—Widow, aged 79, complained of very severe tinnitus. Had a considerable degree of deafness—i.e., she could hear the raised voice at three feet. Stated that she could not hear owing to the loudness of the noises, which kept her awake at night. She had had them a long time; and recently they had started to take the form of voices speaking to her. The noise was bilateral. The tympanic membranes were slightly retracted, but repeated Eustachian catheterisation showed clear tubes, and produced no improvement. Months of treatment with bromides had no effect. Tuning-fork tests impossible, the forks being drowned by the subjective noises. Patient conversed in a very loud voice. This case was one of the worst cases I have seen. The tinnitus was gradually producing insanity. Her blood pressure was only 105 mm. of mercury.

Case 2.—Male, aged 54, complained of loud noises in both ears. No deafness, no apparent aural cause; Eustachian tubes clear; patient had no other complaints and was apparently in good health. The teeth were in order. His blood pressure was 115 mm.

Case 3.—Female, aged 41, suffering from severe noises in the left ear which keep her awake at night. They had come on during the last few months. Right ear normal, but in childhood she had a discharge from the left ear. There was now slight deafness in left ear, and an old healed perforation of the membrana tympani with some scarring. Blood pressure 105 mm.

Case 4.—Female, aged 60, deafness and noises, with Eustachian catarrh. Eustachian catheterisation, and treatment of the nose improved both the deafness and the noises, but by no means cured them. Her blood pressure was 115 mm.

It may quite justifiably be objected that because a low blood pressure coexists, with the tinnitus and aural conditions, that it is not necessarily a causative factor. But I regard it as more than a coincidence because of its frequency and because of the following case:—

Case 5.—Female, aged 20, complained of deafness and tinnitus. Paracusis was another symptom. She was suffering from otosclerosis with a marked catarrhal element which disappeared on treatment, leaving a basis of otosclerosis. Her blood pressure was 125 mm. I gave tab. trinitrini 1/100 gr. b.d. for a week purely as an experiment. She returned and said that the noises were infinitely worse, and now kept her awake at night. Her blood pressure had fallen to 105 mm. On leaving off the trinitrin the tinnitus returned to its usual condition, which caused her inconvenience but as yet no serious worry. Her blood pressure returned to normal.

This case shows how the lowering of the blood pressure adds to the severity of the tinnitus in a patient with a normal blood pressure suffering from tinnitus from another cause; and taken with the previous cases proves the causative effect of a low blood pressure.

Group 2.—*Cases Associated with High Blood Pressure Improving on Administration of Trinitrin.*

Case 6.—Female, aged 49, suffering from severe tinnitus and some deafness in the left ear. Left drum definitely retracted, and air entry to Eustachian tube was poor. Tinnitus made worse by exertion, always increased towards end of day, and kept her awake at night. A day of rest always improved the noises. Many months of Eustachian catheterisation, and of bromides, had no effect in improving the noises. Blood pressure 160 mm. She was then given tab. trinitrini 1/100 gr. nocte for one week, and returned to say that the noises had distinctly improved and that she could now sleep well. The trinitrin was then increased to 1/100 gr. t.d.s., and at the end of a month she told me that the noises had practically gone, for which she thanked me profusely. I have not seen her since. Six months later she wrote to say that there was still "some improvement."

Case 7.—Female, aged 62, had no deafness, but had very severe tinnitus causing insomnia. Tympanic membranes only slightly retracted, but some months of bromides and Eustachian catheterisation had no effect. Blood pressure 190 mm. Treated with tab. trinitrini 1/100 gr. nocte, she was able to sleep. After a week of taking it at night she took 1/100 gr. three times a day, until in a month the noises had almost disappeared. She wrote six months later to say that the noises were still "better."

Case 8.—Female, aged 44, complained of slight deafness in right ear, with loud tinnitus which kept her awake at night. Her right ear was disorganised as a result of obsolete suppurative otitis media which had left the tympanic membrane broken and scarred. Administration of bromides had no beneficial effect. Blood pressure was 150 mm. She was given tab. trin. 1/100 gr. b.d., which so much relieved her that she was able to sleep well, and the noises only appeared for one day in every three, and were slight even then. I then did not see her for three months, during which time she took bromides, and the noises reappeared with their old intensity. She was again put on tab. trin. with beneficial results.

Case 9.—Male, aged 68, complained of loud tinnitus in right ear, with occasional giddiness. No deafness. Eustachian catheterisation of right ear produced improvement for two hours only. Air entry quite free. No catarrh. Blood pressure was 190 mm. On taking tab. trin. 1/100 gr. b.d. for one month the noises became very slight, and the giddiness disappeared. Blood pressure was reduced to 175 mm. He returned after seven months because the noises had again become worse. On further administration of trinitrin they again improved. His blood pressure was still 175 mm.

Case 10.—Female, aged 75, deafness and tinnitus in left ear, drum of which was very retracted. She suffered from nasal catarrh. Treatment of nose and Eustachian tubes had no effect, nor was she relieved by bromides. Blood pressure 190 mm. Tab. trinitrini 1/100 gr. t.d. for a fortnight produced no effect. On further administration she did not return, but wrote later to say she was "much better."

Case 11.—Female, aged 61, complained of deafness and tinnitus in right ear, the latter very bad, keeping her awake at night. She was sent by a physician with the statement that her blood pressure was 200 mm., but had been reduced to 166 mm. after treatment with pot. iodide. The drug had not, however, improved the tinnitus or insomnia. The right membrana tympani was scarred from old sepsis, and Eustachian catheterisation showed a free air entry. She was given tab. trinitrini 1/100 gr. b.d., but only took it at night, because in the morning it made her feel giddy. The nightly dose had the effect of enabling her to sleep, and so gave her much relief. It did not, however, improve the noises by day. She wrote three months later to say that the noises had got "very much better," but had again returned with an attack of influenza and bronchitis.

Group 3.—*Cases Associated with High Blood Pressure where Trinitrin had Little or No Effect.*

Case 12.—Female, aged 54, suffering from deafness in the right ear with severe tinnitus and headaches. The drum-head of her right ear was thickened and retracted. Continued Eustachian catheterisation and bromides gave no relief. Blood pressure was 175 mm. On taking tab. trin. b.d. for one week the headaches were relieved, and on continuing for a month the tinnitus was also slightly relieved. On further administration she did not return, and could not be traced later.

Case 13.—Female, aged 59, complained of deafness and severe tinnitus in both ears. Eustachian catheterisation produced only slight temporary improvement, even after treatment of the nose. Bromides had no effect. Blood pressure 190 mm. Tab. trinitrini 1/100 gr. b.d. for two weeks produced no improvement. On further administration she did not return, and could not be traced later.

Case 14.—Male, aged 64, suffered from tinnitus in both ears, with no aural cause. Bromides and iodides had no effect. Blood pressure 180 mm. He was given trinitrin for a fortnight and did not return. He refused further treatment on the grounds that he thought the trinitrin was a purgative.

The cases in this group in which no effect was noticed in a fortnight—i.e., Cases 13 and 14—are unsatisfactory, because on taking trinitrin for another fortnight they did not return. I had noticed in other cases that it was only after a month of treatment that any real progress was produced.

Group 4.—*Cases Associated with High Blood Pressure in which Local Treatment caused Disappearance of the Symptoms.*

Case 15.—Female, aged 63, suffering from deafness in both ears, with retraction of the membranes, and from singing and thumping noises in the head which kept her awake. Her nose was obstructed by polypi. Blood pressure 195 mm. The removal of the polypi and Eustachian catheterisation produced complete relief of the aural symptoms.

I have found two or three other cases in this group whose particulars I did not take, because they seemed to show only that a high blood pressure together with a curable aural lesion does not necessarily cause tinnitus when the aural lesion is cured.

Estimation of the Severity of Tinnitus.

This estimation is difficult, because it is dependent upon information supplied by the patient. It is, however, very important from the point of view of investigation, and a short conversation will usually afford a good idea. I have come to divide them into two groups, the typical "slight" case, and the typical "severe" case. There are, of course, many intermediate cases and an occasional "extreme" case.

Class 1: Slight Cases.—These are divisible into (*a*) those who complain of deafness only, from whom the presence of tinnitus may be elicited by questioning; (*b*) those complaining of slight tinnitus, with or without deafness. Many of these will confess that they believe the tinnitus is always there, but they notice it only when they have nothing to do. They usually forget all about it for most of the 24 hours. It does not prevent them from sleeping. This class forms the majority of all cases of tinnitus.

Class 2: Severe Cases.—The hall-mark of this group is insomnia. It consists of those who, whether deaf or not, say they would not mind anything if only they could get to sleep and forget the terrible noises in the head. They may either volunteer the statement, or disclose it without any too particular questioning, but there is very little doubt of them, as distress and anxiety are plainly written upon them. They are very neurasthenic, but the neurasthenia is the effect rather than the cause of their trouble, and disappears under successful treatment of the condition causing it. There are one or two extreme cases who are eventually driven to suicide or lunatic asylums by the ceaseless horror of noise that will not leave them. Of this type is Case 1.

All cases reported here are either of the "severe" or "intermediate" type, with one "extreme" case. None of them are "slight" cases. I am glad to say that it was some of the "severe" cases who received the greatest benefit.

Treatment.

1. Treatment of the aural disability. I believe this to come first, because in certain cases—i.e., Group 4—the treatment of the local condition may produce a rapid and complete cure.
2. Treatment of cases of low blood pressure. It seems obvious that if the low blood pressure is the cause of the trouble, as I believe it to be, then the correct line of treatment is to hand the patient over to a physician to raise the blood pressure. Bromides may relieve symptoms slightly.
3. Cases of high blood pressure. I think that after the aural disability is treated these also are best controlled by a physician, with occasional reference to the aurist.

Trinitrin.—I used tabellæ trinitrini at first purely for purposes of investigation, but have come to regard it as an essential element in the treatment. My reasons are two:—

1. In Cases 6 to 9 (where trinitrin did most good) the blood pressure was not outrageously high, and the temporary redistribution of the blood to the capillaries by trinitrin had a remarkably beneficial effect, especially at night in enabling the patient to go to sleep.
2. In Case 14 the patient's blood pressure was reduced from 200 mm. to 166 mm. while under the care of a physician, but there was no response on the part of the tinnitus which was as bad as ever. But on taking trinitrin at night she was able to sleep, and her general condition improved.

It is stated in text-books that trinitrin is one of the drugs which produce tinnitus aurium. I have found that it only does so in normal people by reducing their blood pressure below normal; in people with a too high blood pressure the tinnitus is relieved. It is possible that tinnitus in these cases is due to the contraction of the arterioles preventing a full distribution of blood to the labyrinth, and that the relief of this contraction improves the condition. But this is only conjecture. I have used trinitrin because I believe it to be the safest of the drugs producing the same effect in the same way; but I am open to correction on this point.

Conclusions.

1. That cases of severe tinnitus aurium with abnormal blood pressure form a large and important group in which much distress can be relieved. (The number of these cases can be estimated by the fact that I collected some 25 with ease in about three months. Those published, with one exception, represent the first 15 of these. The unpublished ones, of which I have not yet taken full particulars, do not appear to differ materially from the preceding. These 25, however, appear to be largely a residue of undiagnosed, and consequently incorrectly treated cases. Fresh cases only accumulate slowly.)
2. That severe tinnitus aurium may be due to a high blood pressure alone or to a low blood pressure alone, in which case it is usually found to be bilateral.
3. That it may be due to an aural lesion combined with a high blood pressure, or with a low blood pressure, in which case the tinnitus is on the side of the lesion.
4. That in the circumstances just quoted the tinnitus may be cured or improved by removing the aural lesion alone, or by reducing the blood pressure to approximately normal, or by doing both.
5. That trinitrin is of great value as a therapeutic agent in the cases associated with a high blood pressure, as it appears to have a specific effect in relieving the tinnitus.

I hope to make further investigations with regard to tinnitus due to low blood pressure. I have to thank Mr. Harold Barwell for his help and encouragement in undertaking this research; and also Mr. Herbert Tilley and Mr. Lionel Colledge for permission to publish some of the cases.

NOTE ON

THE DIAGNOSTIC VALUE OF X RAY EXAMINATION IN TRAUMATIC INTESTINAL RUPTURE.

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IN a recent paper on traumatic intestinal rupture[1] attention was drawn to the enormous mortality which attends this accident, and the view was expressed that in at least some cases the detection of a localised pneumo-peritoneum might prove of diagnostic value. The following case, in which the duodeno-jejunal junction was ruptured, is of interest not only because it illustrates the value of this examination, but also on account of the rarity of rupture in this situation.

A Case Described.

Male, aged 52, admitted to hospital on July 2nd, 1923, complaining of severe pain in the abdomen, which followed an injury a few hours previously. While riding his bicycle the patient was struck beneath the left costal margin by the shaft of a milk-cart and thrown into the middle of the road. The pain was so severe that he was unable to get up, and while in the ambulance on the way to the hospital he several times vomited a small quantity of blood.

Condition on Admission.—Patient extremely shocked, rather cyanosed in appearance, complaining of great pain in abdomen and of severe thirst. On palpation, whole of upper abdomen rigid. Liver dullness normal on percussion; no evidence of free fluid in abdomen. Temperature 98° F.; pulse 110 and rather feeble. X ray examination of abdomen showed a moderately large translucent area immediately to left side of second lumbar vertebra (see figure), suggestive of a localised pneumo-peritoneum. No other abnormality was seen.

Diagnosis.—A diagnosis of rupture of the bowel was made, and on account of the situation of the opacity seen in the radiogram it was thought that the rupture had taken place in the highest part of the jejunum.

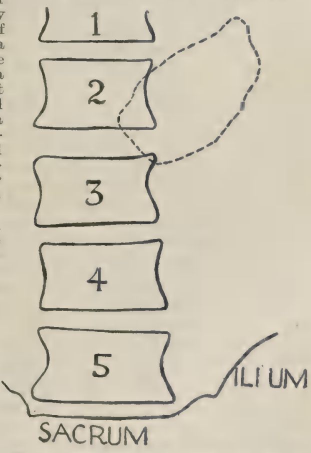

Diagram of X ray plate, showing the relation of the air bubble to the lumbar vertebræ.

Operation.—Operation was undertaken immediately—that is, five hours after the accident. The abdomen was explored through a left paramedian incision, and at first nothing abnormal was noticed. On lifting up the transverse meso-colon, however, a sudden hiss of escaping gas was heard, and on further examination it was seen that the duodeno-jejunal junction was completely divided. A small quantity of blood surrounded the damaged parts, but there had been no escape of intestinal contents and there was no evidence of peritonitis. The third part of the duodenum had retracted behind the peritoneum, which it was found necessary to incise immediately to the left of the superior mesenteric vessels before removing the everted mucosa. In the jejunum, about an inch distal to the injury, a further rupture was found, involving the intestinal wall for about half its diameter. The first two inches of the jejunum were therefore removed and end-to-end anastomosis performed, not without some difficulty owing to the impossibility of bringing the bowel to the surface. The small quantity of blood above mentioned was removed and the abdomen closed in the usual way without drainage. The patient was returned to bed, and in view of his critical condition, which was considered largely due to shock, 10 oz. of citrated blood were given with marked improvement.

The patient made an uninterrupted recovery, and was discharged 16 days later.

Remarks.

The possibility of X ray diagnosis in intestinal injuries was first pointed out in 1916 by Lenk,[2] who, in several cases of gunshot wounds of the abdomen, observed between the liver and the right side of the diaphragm a crescentic air-bubble, which he found to be associated with injury to the stomach or the colon. This author later called attention to a similar condition on the left side, which sometimes obscured the shadow of the spleen and usually was due to injuries in the vicinity of the splenic flexure. Lenk remarks that the suspicion that these appearances were due to injury of the diaphragm and pleura, at operation proved unfounded.

Dandy[3] had recourse to X ray examination of the abdomen in a case in which the diagnosis was obscure, and succeeded in demonstrating a localised pneumoperitoneum, which was later found to be due to the perforation of a typhoid ulcer at the lower end of the ileum. In a further case of the same nature, in which perforation of a gastric ulcer was considered a possibility, Kellogg[4] was able to find an air-bubble above the right side of the liver, similar to that described by Lenk, who had previously suggested that in cases of this nature the examination might prove of some value.

These authorities have all pointed out that free gas within the peritoneal cavity rises within the limits of the cavity to which it is confined, and gas arising from injuries in the upper abdomen finds its way to the diaphragm. In injuries of the lower abdomen this may not be the case and the pneumo-peritoneum remains localised. In the case of the upper part of the jejunum it would appear that the transverse meso-colon and the great omentum form an effective barrier to the upward escape of gas, unless this is of large quantity, which is not usually the case. In these cases the gas tends to pass upwards only as far as the attachment of the transverse meso-colon, appearing, as in the case reported above, near the body of the second lumbar vertebra, whither the attention of the observer should be directed.

The diagnosis of traumatic intestinal rupture is notoriously difficult, the onset of symptoms suggesting peritonitis is usually late, and operative interference is in many cases delayed with disastrous results. It is not contended that the X ray examination should replace the judgment of the clinician, but rather that it should be regarded an an adjunct to the diagnosis of a difficult case.

In many cases naturally the necessary apparatus is not at hand, but at the same time, when it is considered that the mortality of intestinal rupture is about 75 per cent. in hospitals and institutions where every means of complete examination is possible, it is evident that every available piece of information is of importance as a potential factor in the reduction of so high a death-rate.

I am much indebted to Mr. R. P. Rowlands for permission to publish this case.

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A CASE OF PROTRACTED DIABETES MELLITUS IN CHILDHOOD ARRESTED BY INSULIN.

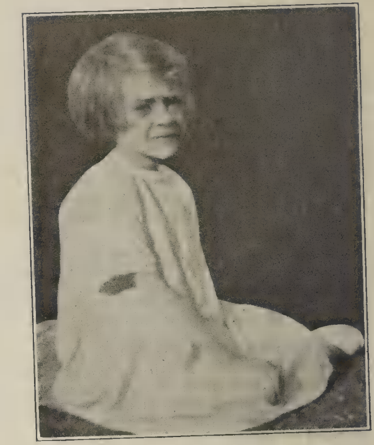
BY W. H. PASSMORE, M.R.C.S. ENG.,

AND

M. O. RAVEN, M.D., B.CH. OXF.

FOLLOWING upon an attack of rubella in March, 1918, this little girl, aged 4 years, developed symptoms of diabetes mellitus—viz., thirst and wasting. In May, 1918, she was examined by Dr. G. F. Still, who found her weight to be 2 st. 3½ lb.; she was thin and pale, and the urine was loaded with sugar. She was put upon a diet, which kept the urine sugar-free, and at the end of four months had put on as much as 7 lb.; her appearance was bright and happy, and a certain quantity of bread and potatoes was able to be included in the diet. During the next 18 months there was little if any deterioration, but the routine of the urine testing carried out at home became less rigid, and she was found to be very poorly in April, 1920, when the urine was full of sugar and contained acetone. The weight was now 2 st. 9 lb. 10 oz., as compared with 2 st. 10 lb. 12 oz. in September, 1918.

FIG. 1.



Appearance of the patient in October, 1923.

Pre-Insulin Treatment.

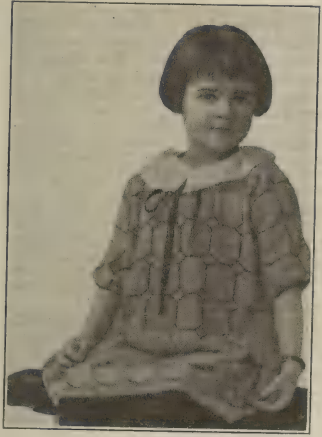
As in 1918, one day's "starvation treatment" rendered the urine sugar- and acetone-free, and by ascending the ladder diet in accordance with Allen's dietary, weight for weight, a diet of nearly 1000 calories was reached without the occurrence of glycosuria. No increase of weight having occurred, the child was rather thin, but was quite active and able to run about and go to school. By October, 1920, 1 lb. had been gained and this weight was maintained in spite of an operation performed by Mr. W. G. Sutcliffe, under open ether anæsthesia, for a suppurating tuberculous gland in the neck; this operation led to no kind of complication and the wound healed well.

During 1921 the weight was maintained, but the food tolerance was steadily diminishing and emaciation was becoming progressive. As much rest as possible was given, but she was still able to run about actively.

In February, 1922, however, within 48 hours of the urine having been sugar-free, a condition of semi-coma developed owing to some dietetic error. The child was very drowsy, intensely thirsty, and had dyspnœa with Cheyne-Stokes variation. Saline given per rectum was not retained, but use was made of the great thirst to give all fluids saturated with bicarbonate of soda, of which a very large quantity was taken. At the end of 12 hours the condition was much improved; brandy was being given, but for a week following the attack no food was given except an occasional egg and raw green vegetables. After a week the urine became alkaline and free from sugar and diacetic acid.

As a result of this illness the condition deteriorated, and by the following April, two months later, the weight had fallen by 3 lb. The condition of the child during the following 12 months became more and more that of an invalid and altogether another 4 lb. were lost. Œdema of the legs and feet came on early in 1922, possibly owing to the intensive treatment with bicarbonate of soda. The face also became slightly œdematous. Emaciation became more and more extreme, and the tendency to bed-sores required constant watching, but fortunately the child was always able to get about gently in the house. Any return of glycosuria as the food tolerance diminished was invariably accompanied by marked acetonuria, so that it was never safe to allow sugar to be passed in the urine for more than a few hours. During this year various forms of pancreatic and hepatic extracts, intestinal antiseptics, raw meat juice, and, externally, olive oil, were used without the slightest effect.

FIG. 2.



Appearance in February, 1924.

In December, 1922, a pancreatic extract prepared by Dr. Mackenzie Wallis was used for two months, and during this time 1¾ lb. were gained; moreover, the constant association between the glycosuria and the acetonuria was changed, so that the margin of safety as regards life was greater. There was, however, no effect upon carbohydrate tolerance. Early in 1923 the worst complication of all occurred in the form of severe neuralgic pain in the head, radiating from the ears, and being fairly continuous by day and night for nearly two months. At this stage the condition was indeed pitiable, and, had it not been for the hope held out by the researches on insulin at Toronto, perseverance in rigid treatment by diet would perhaps hardly have been justified. By the summer, however, the pains gradually left her, and the condition seemed fairly stable again, when Dr. F. J. Poynton saw her with a view to starting insulin treatment. It was then decided that treatment should be started as soon as the likelihood of extreme heat in London should be over.

Insulin Treatment.

Early in October, 1923, accordingly, the child was taken to University College Hospital. Her appearance at this time is shown in Fig. 1.[1] With regard to it, I can only say that the parts covered by clothing gave a considerably more marked appearance of emaciation; the bones of the pelvis were seen beneath the skin in their skeletal outline; the upper arms were almost unbelievably thin. By this time the calorie value of the diet had fallen to 364 and the weight was 2 st.; in five and a half years, therefore, she had lost 3½ lb.

Insulin treatment was successfully initiated and continued by Dr. Poynton and Dr. K. S. Hetzel in October, 1923; except for a fortnight's slight set-back the gain in weight was steady, and in a short time the calorie value was nearly trebled. When the child returned home just before Christmas 9 lb. had been gained; she was no longer an invalid and the deposit of the new subcutaneous fat was a most remarkable thing to see, particularly round the pelvis and the neck. The treatment has been continued since her return home, 16 units of insulin being given before the first and 8 units before the last meals in the day, these two meals containing the bulk of the carbohydrate. Slight insulin reactions have occurred and have been easily checked with a little barley sugar or milk. During an attack of coryza, glycosuria set in suddenly and was dealt with by lowering the diet and raising the insulin dosage. Fig. 2 shows the general appearance in February, 1924; when the patient is stripped the change is much more remarkable.

On April 25th, 1924, the weight has reached 3 st. 9 lb. 12 oz., and the child goes to school every day. The calorie value of the diet is just on 1000 and she is putting on 1 lb. a week still. It does not seem necessary to do many blood-sugar estimations at the present stage; the last one made showed a fasting blood-sugar of 0·16 per cent., as compared with 0·20 per cent. estimated in University College Hospital. The only unusual thing in the child's appearance is the very large size of the abdomen; this may be due to the uneven way in which the new fat is undoubtedly distributed, or possibly to hypertrophy of the intestines following upon the enormous quantity of cellulose ingested during the past six years.

Broadstairs.

SOME OBSERVATIONS ON ENTERIC FEVER IN THE NATIVES OF THE UGANDA PROTECTORATE.

By H. LYNDHURST DUKE, O.B.E., M.D.,
Sc.D. CAMB.,
BACTERIOLOGIST, UGANDA PROTECTORATE.

THE following is an attempt to review the evidence bearing on the origin and nature of enteric fever in tropical Africa, and in Uganda in particular. To the investigator whose work lies in a foreign country and among primitive peoples, the first recognition of one of the diseases of Europe in a native subject possesses a peculiar interest. Questions suggest themselves about the biological relation of micro-parasites to their hosts, and we realise afresh the tremendous efficiency of the "lower organisms" in the struggle for existence.

In the present instance a series of cases of typhoid in natives occurred, within a comparatively short space of time, in and around Kampala, the so-called commercial capital of Uganda. A similar small epidemic occurred in Kampala in 1919, but at that time the material from the cases was sent from Kampala to Entebbe, and not dealt with at the bedside; and although the clinical symptoms and agglutination tests proved the disease to be caused by *B. typhosus*, in only one case was the causative bacillus isolated and that post mortem. The cases described here were more fully investigated. The various medical officers in charge of them kindly afforded me the necessary facilities for making a bacteriological diagnosis, and also supplied the clinical notes reproduced below. I personally visited the majority of cases, and took blood and stool-cultures at the bedside. The absence from the available literature—both text-book and periodical—of any account of enteric fever in African natives has prompted this publication.

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[1] NOTE.—A member of the Editorial Staff of THE LANCET saw this child in October, 1923, when the condition appeared even worse than that shown in the photograph.

Enteric in the Tropics.

In the interesting historical survey of enteric fever given in Castellani and Chalmers's "Manual of Tropical Medicine," the first description of the symptoms of the disease now known under this name is ascribed to Spigelius, who wrote in 1864. From this date onwards various medical writers described fevers of similar type; but it was not until the early years of the nineteenth century that the clinical conception of the disease, as we now know it, first took form. *B. typhosus* was first recognised by Eberth in 1880. For a time enteric fever was regarded as essentially a disease of temperate climes, but soon after its recognition as a clinical entity in Europe it was reported from various tropical countries—always, however, as a disease of Europeans. Opinions differ as to the origin of enteric in tropical lands—i.e., as to whether it is indigenous or introduced by foreigners. In the case of the older European settlements it is no longer possible to decide upon this point. Some were founded before the nature of the disease was properly appreciated; in others of later foundation the energies of the few available medical men were fully occupied in combating the formidable array of unfamiliar diseases with which they were confronted; so that mild and atypical cases of enteric may well have been overlooked until facilities for accurate diagnosis improved.

The recognition of enteric in the coloured races of the tropics has, it seems, always been preceded by the detection of the disease in the European population of the area concerned. This order of events is easily intelligible. As a general rule, in the early stages of the invasion of their country natives are slow to avail themselves of the help of European practitioners. Time and experience usually overcome their prejudice; but it is the surgeon rather than the physician who first gains their confidence, inasmuch as his successes are the more rapid and arresting. A disease such as enteric, by the very lassitude which it engenders, will probably be allowed to run its course in the seclusion of the patient's own hut. Again, atypical cases of enteric are notoriously difficult to diagnose without assistance from the laboratory; and it is probable that cases of this kind are not uncommon in native communities, where sanitation is non-existent, and where, in consequence, the people are constantly exposed to contact with fæcal organisms. And so it happens that by the time enteric has been recognised in the native population of a tropical country, it is, as a rule, no longer possible to determine whether the disease existed in that country before the advent of foreigners.

Nowadays, cases of enteric in natives have been reported from practically every country in the tropical zone. To all intents and purposes sanitation does not exist among undisturbed native tribes. It is, therefore, difficult to imagine that a disease whose causal organism is eliminated in human excreta, and largely depends on water, flies, and dust for its propagation, can owe its present wide distribution solely to importation from temperate climes. On the contrary, is it not more probable that enteric has always existed in these tropical lands, and that the inhabitants have, in the course of time, acquired a considerable resistance to the disease—at all events, in its indigenous form? Speaking of enteric, Manson-Bahr, in the seventh edition of Manson's "Tropical Medicine," remarks:—

> "It is not unlikely that the relative exemption—if such there be—of the native races is owing to a like immunising effect produced by living in constant contact with typhoid and similar toxic agents, or to an attack in childhood."

Dysentery and diarrhœa are common diseases among the natives of tropical countries. Both the bacillary and the amœbic types have been found, and have a similar geographical distribution. The symptoms of dysentery are sufficiently striking to enable the native easily to recognise this disease, and consequently no doubt the belief exists that dysentery is indigenous to most tropical countries. The symptoms of enteric are less localised, and the disease—especially in its mild or atypical forms—is not likely to hold the attention of the unsophisticated native. It may well be that some of the non-dysenteric diarrhœas so common among native races in the tropics are due to enteric organisms.

Enteric in Natives of Tropical Africa.

We will now proceed to a brief consideration of the distribution of enteric in tropical Africa, concentrating attention finally on the native kingdom of Buganda in the Uganda Protectorate.[1] Standard text-books on tropical medicine afford little or no information on the prevalence and course of the disease in Africans. Cases of enteric in African natives, some of them fatal, have been reported from Zanzibar, Nyasaland, Kenya, Tanganyika Territory, Uganda, Northern and Southern Nigeria, the Gold Coast, and the Sudan in British territory, and also from the French and Belgian possessions. From a perusal of the annual medical reports of these countries the impression is gained that, with better facilities for diagnosing the disease, enteric would be found to be much more prevalent in native populations than is at present acknowledged.

In the annual medical report for Northern Nigeria for 1915 the following passages occur:—

> "It is well-nigh certain that it (enteric) was originally imported by Europeans, and that a number of native carriers have consequently developed since. . . The indigenous native seems to be less susceptible to intestinal disease than is the average European, and this probably explains why native outbreaks have not attended every European case" (of enteric).

In the same series, the report for 1917 contains the following references to enteric:—

> "West African natives constitute a particularly dangerous type of dysenteric and enteric carrier; they are themselves so tolerant of abdominal affections that they not infrequently can carry on easily whilst in a condition which would inevitably prostrate any European."

Dr. C. J. Wilson, acting deputy principal medical officer, Kenya Colony, has kindly supplied me with the figures for enteric for that colony for 1922. The total reported is 38, comprising Europeans 24, and natives 14; native deaths, 2. He remarks:—

> "Of the 14 native cases, 12 were reported from the native hospital, Nairobi. This, to my mind, indicates that enteric may be much more prevalent amongst natives than the figure of 14 for the year would suggest, for accurate diagnosis of a doubtful case is more likely to be made at Nairobi than elsewhere; at other stations cases might easily be overlooked. In my own experience with native carriers during the war, in one month of 1915 I discovered six cases of enteric fever post mortem, not one of which would have been suspected from clinical observation."

From these reports it is evident that enteric occurs in natives in various parts of tropical Africa, and that local medical opinion credits the native with greater powers of resistance than Europeans possess. The mortality of the disease in natives is, however, fairly high—probably owing to the fact that only severe cases are recognised.

Enteric in the Kingdom of Buganda.

Arrival of Foreigners in Buganda.—At the moment of writing the Protectorate of Uganda consists of five provinces, one of which, the Buganda Province, is coterminous with the ancient native kingdom of Buganda. For centuries before the advent of Europeans into the interior of Africa, Buganda was the seat of a civilisation far superior to that of surrounding countries. The social and military organisation of the people was astonishingly complex and efficient, and under a long line of despots the country had for ages dominated its neighbours and maintained complete independence. Hundreds of miles of wild Africa, untraversed by any navigable waterway, lay between Buganda and nearest sea-coast. To the north, across the present Nile route to the sea, lay the hostile kindred race of the Banyoro, whose tribal organisation was almost as powerful as that of the Baganda themselves. To the west lay the Congo with its huge forests and cannibal tribes—an efficient barrier against encroachment from the West Coast. Owing to the geographical isolation and the difficulties of approach, it was not until 1845 that the Arabs, who had been gradually working inland from the East Coast, arrived in Uganda from the south-west. Speke, the first European to reach Buganda, arrived at King Mutesa's court near Kampala in 1862, stayed for six months, and departed home via the Sudan. Baker entered Bunyoro in 1864, and again in 1872; he did not reach Buganda proper. Stanley visited Mutesa in 1875. The first missionaries—three in number—reached the country in 1877, by which date the Arab traders had considerably increased in numbers. The first Indians to reach Buganda arrived in a small detachment during the 1897–98 rebellion, a strong body of Indian troops following later in 1898.

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[1] Various prefixes to the root "*-ganda*": *Lu-*, *Bu-*, *Mu-*, *Ba-*, &c., denote, respectively, the language, the country, a native and natives of the kingdom of Buganda. *Uganda* is, strictly speaking, the Swahili equivalent of *Buganda*, but has become synonymous with the Protectorate as a whole.

The above is a brief sketch of the invasion of Buganda by Arabs, Europeans, and Asiatics. These newcomers may have introduced diseases foreign to the country, but it must be remembered that none but the strongest could survive the trying ordeal of the long march up from the coast. There is, of course, the possibility that there were "enteric carriers" among these foreigners or their dependents. On this point nothing definite can be said. The only relevant comment that suggests itself is that such a carrier would have constituted a grave menace to his travel-companions during the 700-mile journey from the coast, and under the necessarily primitive living conditions imposed on the newly-arrived missionaries at the Buganda capital. Under such circumstances the absence of evidence that the pioneers suffered from any epidemic disease suggestive of typhoid has, perhaps, some slight bearing on the issue before us. All this is, of course, pure speculation, but so also is the introduction theory.

Recognition of the Disease in Buganda.—From these early days up till the arrival of Dr. A. R. Cook in 1897 no great expansion occurred in the foreign occupation of Buganda. Hardly any information is recorded about the diseases of the country during this period. Dr. Cook started work immediately on arrival, and very soon the nucleus of the now famous C.M.S. hospital system was established at the capital. From the outset careful records have been kept. Dr. Cook, with unfailing readiness and kindness, has sent a brief note on the earliest recognition of enteric in Buganda. He writes as follows:—

> "The existence of enteric fever was long denied in Uganda by some of the very few medical writers practising there in the late 'nineties and the early years of this century. Careful in-patient records have been kept at the C.M.S. Hospital, Kampala, since June, 1897, but in those pioneer days, when the railway had only advanced a few miles from the coast and it meant a three months *safari* to reach Uganda equipment had to be cut down to the utmost limits. Obstacles were constantly thrown in our way over the conduct of post-mortem examinations. Though begged for almost on bended knees from the relatives, and the advantages to the living constantly pointed out, they could but rarely be done, and then, as it were by stealth, some five post-mortems only were performed in the first three years. Enteric fever was again and again suspected in natives—.g., one man died from a perforating ulcer of the intestine, nother from hæmorrhage from the bowels; many showed linical signs of the disease, but it was not till 1901 that fortunately-obtained post-mortem in a native showed erfectly typical typhoid ulcers in the small bowel. The pecimen was kept in spirit and shown to unbelievers for ome years. When Colonel (now Sir) David Bruce came to he country in 1903 on the Sleeping Sickness Commission e confirmed the opinion that the ulcers were genuine yphoid ulcers.
>
> In the practice of this hospital cases have always been are; there has never been a general epidemic. As examples f clinical typhoid the following may be cited. I attended Irs. L (European) in March, 1900, while on *safari* to Toro, journey which then took a fortnight. She was attacked y a continued fever, lasting rather over three weeks. She owed rose spots, and miscarried after a fortnight. She had a relapse accompanied by pneumonia, and all but died—her husband starting in to make her coffin. She is still alive and well. . . . I was in close attendance on this unfortunate lady, and, a fortnight after leaving her, started a severe attack of what I took to be enteric. I had continued fever for six weeks with 'tender toes,' quite uninfluenced by quinine up to 55 gr. per diem, and complicated by phlebitis."

From the above it is plain that the disease was sufficiently prevalent in Buganda in 1897 to attract the notice of the first expert who came into close professional contact with the natives.

At the present day the Baganda have no special name for enteric fever in its typical form. The enteric syndrome is covered by the term "omusuja" (fever), the local equivalent of "P.U.O." In the list of diseases that are recognised by the Baganda themselves, though not specifically named by them, there are certain more or less prolonged fevers, accompanied by headache, lip sordes, and dirty tongue, that are usually followed by recovery. Probably some, at any rate, of these fevers are due to enteric organisms. As already mentioned, the conditions in native villages appear at first glance to be most favourable to the spread of this disease. Although the Baganda are relatively clean in their habits, washing their hands before and after eating, and taking care about the cooking of their food, yet they are ignorant of the very rudiments of modern sanitation and hygiene. The water they drink is usually opaque, and is never boiled. The vast majority of the village sources of supply are unprotected surface springs, or holes dug indiscriminately in swamps. The sun is, no doubt, a valuable ally. Springs which even a layman would condemn after the most casual inspection of the vicinity yield water the bacteriological content of which is considerably lower than would be expected from a similar source in temperate climes. There are, however, limits even to the sun's powers; and, on general grounds, one would expect that a race living under such conditions would possess a high degree of resistance to fæcal organisms of all kinds, whether introduced through the skin as in wounds or by the mouth.

In one respect the Baganda have benefited by the geographical isolation of their country. The advance of the foreigner has been slow and on a relatively small scale. There has been no great upheaval in the mode of life of the native, and the changes that have occurred are limited to the vicinity of one or two of the larger settlements. The European community is still small, and the tenor of native life continues in the main on the old-fashioned lines. Carbohydrates bulk largely in the national dietary of the Baganda, and this may to some extent check the dissemination of *B. typhosus* by the fæcal route (Torrey). The so-called towns in Uganda have not developed true "native quarters." There is still plenty of room to move in the Protectorate, and the native keeps, to a great extent, to his villages and retains his old habits.

In this connexion it is significant that where natives are taken from their normal surroundings and crowded together, even though under strict supervision, typical enteric is liable to appear.

Observations.

Of 11 cases of enteric in natives of the Uganda Protectorate occurring at Kampala between June and November, 1923, 2 died (a mortality of 18 per cent.). Their case-histories show that the natives of the Protectorate are liable to attacks of a typical enteric fever. Both deaths were of prisoners in gaol; both men had malaria. Dr. Wilson's experience, quoted above, of fatal cases in British East Africa, related to native porters during the war. In each instance the individuals affected were leading an abnormal existence, under conditions inevitably more or less unfavourable. In the Kampala epidemic of 1919 most, if not all, the cases originated in the gaol.

No doubt a variety of factors combine in determining these outbreaks. The gaol population comprises natives of different races, habits, and constitutions, and weak and strong are in close daily contact; the gaol is dependent on roof or spring water, and it is exceedingly difficult to guard against dust contamination. However well organised and supervised, prison life is prone to exert a depressing effect on the general vitality, and natives are very susceptible to psychical influences and changes in environment. The presence of "carriers" is difficult to detect, and the power for evil of a "carrier" under such conditions is very great. On the first recognition of enteric in the gaol this year the sera and stools of the seven native cooks were examined for evidence of typhoid infection. Two gave complete agglutination in 1/50, and one of these + + in 1/100 with *B. typhosus;* none of the stools yielded the bacillus. Under the circumstances the wonder is not that occasional cases of enteric occur, but that the disease and its congeners are so rare.

No cases of enteric in Europeans have been reported from Kampala during the last few years. Cases occur at rare intervals in up-country stations, indicating a wide distribution of the disease within the Protectorate. The rarity in Europeans is to be explained by the fact that the community is small, that there is still plenty of space, and that the sanitary organisation, though simple, is efficient.

It is at present impossible to pronounce on the prevalence of the disease in natives of the Protectorate. Much investigation is needed, and time and staff are limited. Up to the time of writing, sera from 246 natives attending Mulago Hospital for venereal disease have been tested by the macroscopic method for agglutination against *B. typhosus* and the paratyphoids A and B, the dilutions used being 1/50 and 1/100. Agglutination occurred in three instances, in each case complete in 1/50 and + 1/100, with *B. typhosus.* Sera from 26 other natives, patients in the Kampala hospitals suffering from undiagnosed fevers, gave no agglutination with the enteric organisms. The great majority of these sera came from adult persons of both sexes. According to the views put forward above, in an investigation of this kind special attention should be paid to children and young people, and these are particularly inaccessible. We may conclude from the evidence before us that enteric fever in its typical form is uncommon in Uganda. This is, also, the considered opinion of Dr. Cook, and his opinion carries the weight of 26 years' experience of the ailments of all classes in the Protectorate.

The evidence suggests that enteric organisms exist in the native population of the country, but that, under normal conditions of life, the balance between the organisms and their native hosts is well adjusted. Alterations in environment—particularly changes in diet, crowding, and close contact with strangers (white or coloured)—may disturb this equilibrium, and the organism may then assert itself in its classical European form.

Unfortunately the evidence bearing on the origin of enteric fever in Buganda is inconclusive. Dr. Cook recognised the disease before it was suspected by his colleagues of those early days of medical-missionary enterprise; and it is interesting that his diagnosis was based on symptoms observed in native Africans, and not in European patients. The usual order of discovery is thus reversed.

But we are not much nearer the solution of either the general or the local problem. The balance of probability seems to be in favour of certain assumptions—namely, that enteric is a disease indigenous to tropical countries; that the newly arrived European, being racially less inured to dirt (in the broadest sense of the word) than are his less squeamish coloured brethren, and handicapped also by an unfavourable environment, is particularly susceptible; and that the natives of a tropical country possess a relatively considerable resistance, under the conditions of life normal to that country.

My thanks are due to Dr. J. H. Reford, Principal Medical Officer, Uganda Protectorate, for permission to publish these notes; also to Dr. W. L. Webb, Superintendent of Mulago Native Hospital, for his kindness in allowing me access to the material in that establishment.

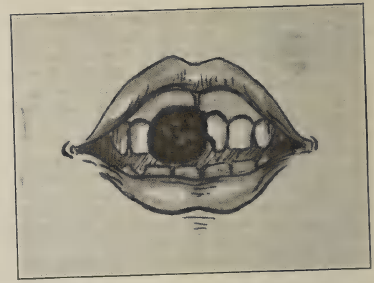
Clinical and Laboratory Notes.

MYELOMA OF THE UPPER ALVEOLUS IN A CHILD.

BY P. B. KITTEL, B.CH. CAMB., M.R.C.S. ENG.,
LATE SENIOR HOUSE SURGEON, METROPOLITAN HOSPITAL, LONDON, E.

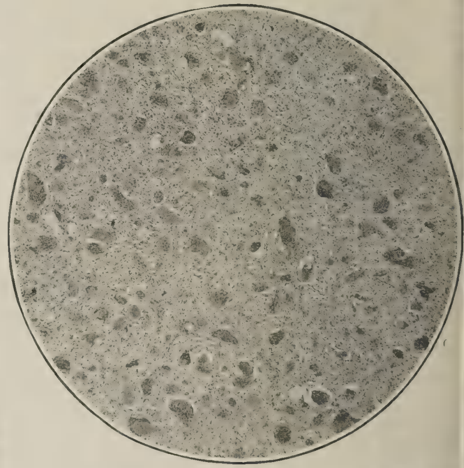
THE following case is recorded as the condition seldom occurs at an early age.

Early in July, 1922, a boy, aged 5½, was brought to hospital complaining of a sore place on his upper jaw under the lip.



Appearance of myeloma.

His mother gave the following history: On May 24tb, 1922, he fell against a wall, knocked out the middle right incisor tooth of the upper jaw, and chipped his left middle incisor. The injured gum gave no trouble and was believed to have healed. But it was noticed later that the site of the lost tooth was becoming filled with a dark red substance. This grew until it became uncomfortable from its size. It was painless and did not bleed. In place of the right middle incisor a flat circular plum-coloured growth was to be seen extending by its edge on the left to cover half the remaining middle incisor on the right, overlapping the lateral incisor and above, one-eighth of an inch higher than the edge of the gum. It has a circular base, limited by the gap between the teeth. The edge overlapped the base all round, and was



Section of myeloma showing giant cells and fusiform cells.

smooth, regular, and firm. It was covered with a film of tenacious slime. The centre was probed, but no portion of dead tooth was felt. An X ray showed healthy bone and unerupted permanent teeth. The appearance is shown in Fig. 1.

Operation.—The growth was excised under general anæsthesia. The mucous membrane was incised close to the base of the growth and the base divided. There was some free arterial bleeding, which was stopped with a suture. The wound healed rapidly and left a firm gum, without scar or irregularity.

The section (Fig. 2) shows giant cells and fusiform cells seen in myeloma. It is interesting to notice here that a cure was produced without interference with the bone; a scalpel only was used to remove the growth.

This type of tumour is well known to occur in the jaws, both within the bone and outside it, but at this age it is uncommon. This one doubtless arose from the soft tissue covering the bone or dental membrane. The boy had no congenital deformity of the face or irregularity of the milk teeth. The growth contained no other type of tissue, save that shown in the section. The tumour reached the size which Fig. 1 indicates, as far as can be known, between May 24th and July 21st, 1922. It had no capsular covering on the surface, yet preserved a button-like shape with a smooth edge. An infected wound seems in this case to be connected with the origin of the disease.

FOUR CASES OF HERPES ZOSTER.

BY H. A. COOKSON, M.B., F.R.C.S. EDIN., D.P.H.

(From the Pathological and Bacteriological Departments, Royal Infirmary, Sunderland.)

THE following cases of herpes zoster are of interest in relation to their occurrence, and tend to support the theory that this disease is really an infective poliomyelitis posterior acuta.

In group A there were three cases, brief notes of which are below.

CASE 1.—Dr. X., aged 34½ years, had a typical attack of intercostal herpes zoster, with neuralgic pains. He had had chicken-pox.

CASE 2.—Mr. Z., aged 30 years, had severe intercostal neuralgic pains (13 days after Dr. X.), with a scanty eruption, not so closely limited to the intercostal nerve involved as in Dr. X.'s case. Mr. Z. had had chicken-pox in childhood.

CASE 3.—Dr. Y., aged 38 years, developed herpes zoster 14 days after Mr. Z. The intercostal neuralgia was fairly severe, and the eruption, although less marked than in the case of Dr. X., was more marked than in that of Mr. Z. There were also one or two vesicles in other parts of the body and the neuralgic pains continued a considerable time afterwards. Dr. Y. had had chicken-pox as a boy. He also had a leucocytosis of lymphocytic type.

The persons concerned in this small outbreak were all in fairly close contact at their work daily, and it appears that they infected each other. At the same time there was a fair amount of chicken-pox in the district in which they lived, the outbreak of chicken-pox being at its height when these herpes cases occurred. It will be noted that all the persons in Group A had had chicken-pox previously.

In Group B there was one case.

CASE 4.—Dr. L., aged 58, 14 days after seeing a patient with herpes zoster, contracted the disease in the supra-orbital region. He was severely attacked with great pain and a considerable eruption, the neuralgic pains persisting. He had had a previous attack of herpes zoster 20 years before.

These cases, unfortunately rather scantily observed, are very suggestive of herpes zoster being an infective disease, on the lines of poliomyelitis anterior acuta—the incubation period being possibly 14 days. Apparently the chances are that chicken-pox had no relation to the attacks; and it is noteworthy that in the case in Group B immunity from the disease did not remain permanent.

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of this Society was held in the rooms of the Medical Society of London on April 25th, the chair being taken by Mr. DENNIS VINRACE.

Neuro-recurrence after Arsenobenzol.

Mr. E. R. T. CLARKSON, the hon. secretary, said that out of 34 replies to the questionnaire addressed to medical officers of military hospitals concerning cases of neuro-recurrence following the administration of arsenobenzol only one such case was reported, and that was in a private patient. One well-known syphilologist, however, had written in a general way, without giving any cases, contending that there had been an increase in nerve syphilis following the newer methods.

Bismuth Therapy in the Treatment of Syphilis.

Major A. T. FROST, R.A.M.C., opened a discussion on this subject. He said that in 1921 Sazerac and Levaditi reported the result of treating five cases of syphilis by means of tartaro-bismuthate of potassium and sodium, and since then much work had been done on the subject. In this country, so far, little desire had been shown to desert the arsenical compounds for the newer preparations, and rightly so. Among the preparations on the market it was difficult to choose the one which combined an efficient dose in reasonable bulk which was painless, did not encyst in the tissues, and was absorbed into the general circulation at the right pace. The tartaro-bismuthate of sodium and potassium was too painful for general use, and the substance which became popular owing to absence of pain and induration, the iodo-bismuthate of quinine, had too small a bismuth content, varying from 24 to 50 per cent. of metal. The simple salts of bismuth, such as the hydrate and the chloride, contained 80 to 90 per cent. of the metal. The oxychloride could be given without causing pain when properly made, and 2 c.cm. of it bore a sufficient dose. Major Frost thought it would be better if the dosage could be got into 1 c.cm. Its absorption was even and not too quick or too slow. There were many trade preparations of the metal in a finely-divided state, and the highest percentage of bismuth in them was 97. Some said these were painless, others that they had had to stop the injections because of pain and indurations. He had himself received complaints of pain five or six days after the injection, and of a painful node at the injection site. If, however, the injection passed directly into the muscle sheath, and the skin was pinched as the needle was withdrawn and held for a short time, no complaint was made. He did not think the healing activity of the best bismuth preparation was likely to be greater than that of the arsenobenzol group. He urged that there should be an abandonment of the present haphazard methods of preparation, and the adoption of a standard based on definite physiological and chemical laws. With bismuth in liquid suspension it was too dangerous, in clinics, to take a dose from a bottle when accuracy depended on the vigour of agitation of the bulk while the dose was being withdrawn. With a semi-solid suspension this difficulty was not so pronounced as with mercurial cream, as the bismuth was unaffected by overheating, and most of the salts were sterilised at 120° C.

Bismuth was slow in healing up the active signs of disease in comparison with arsenic, and that fact militated against its use in venereal clinics except as an adjuvant. The most which could be claimed for the drug in the early stage of primary syphilis was that an originally negative Wassermann reaction did not become positive during the course. It was of great use in relieving painful symptoms in the late nervous stages. In one of his own cases which had shown no improvement under arsenic the man began to lose his pains after four injections of bismuth, and in a fortnight resumed his ordinary work. After one or two doses bismuth could be recovered from the cerebro-spinal fluid, hence it was reasonable to regard it, when combined with arsenic, as an important protector of the central nervous system against attack by the *Spironema pallidum*. He had not yet seen a case which could not take bismuth. Some patients developed albuminuria early in the treatment, but it cleared up after 14 days' cessation and did not return on resuming the treatment. He had seen only one case with definite inflammation of the gums, though most of the cases showed a black line on the dental edge of the gums all through the course of combined arsenical and bismuth treatment. Cases intolerant to arsenic he had continued to treat with bismuth, and without untoward effect, but without a positive blood test becoming negative, and he asked whether, in such cases, a more intensive bismuth course should be given. So far he had not exceeded 9·2 g. of the metal weekly. His method during the past year had been to give a first series of seven injections of stabilarsan and seven injections of bismuth in 57 days, repeated after an interval of a month, and 14 days of potassium iodide just before the second series. At present he did not think one could go further than to state that bismuth therapy was superior to mercury therapy for primary, secondary, and tertiary lesions of syphilis when either was combined with arsenobenzol. He did not think "bismuth-fastness" was likely to occur. The fact that bismuth was ten times more toxic by the veins than when given by the intramuscular or the subcutaneous route was a drawback. As a safety test he first plunged the needle into the injection site, then if no blood came from the needle butt he attached the syringe and applied negative pressure by pulling on the piston while the hand holding the syringe was fixed against the buttocks. Colloidal bismuth was probably highly active for a short time in the blood-stream, but it soon became inert as a colloid and then merely acted as a minute amount of metallic bismuth in the body. There were, the speaker concluded, three metals in the lists in the fight against syphilis, of which the latest had made a bid for second place. It had been suggested to him that cadmium might be useful in the same connexion. The more drugs of high curative and high sterilising power there were available the better, for then the clinician had more scope in cases in which individuals showed intolerance to any one drug.

Discussion.

Colonel E. T. **Burke** said that the preparations he preferred were neuthanol, iodo-bismuthate of quinine, biquinil, and luatol. No stomatitis, nephritis, nor any injection lesion occurred after them, in his experience. He agreed that bismuth displaced mercury as an antisyphilitic. His present practice was to alternate bismuth with stabilarsan, discarding mercury. He did not think arsenic should yet be discarded in favour of bismuth. Arsenic and bismuth should not be given concurrently, but in alternative courses. During the last 18 months he had treated 23 cases which were apparently drug-fast to arsenic and mercury, for the Wassermann remained positive. He treated them with iodo-bismuthate of quinine, and 12 of them now gave a negative Wassermann, though in two the cerebro-spinal fluid remained positive to that test. The great value of bismuth lay in its efficacy for cases which proved to be absolutely intolerant of arsenic.

Captain C. **Doble** expressed his agreement with Major Frost concerning cases which had persistently given a positive Wassermann under ordinary treatment becoming negative under bismuth. He related some cases in which under treatment with arsenic compounds the Wassermann remained positive many months, but quickly changed to a negative response under bismuth. There was an objection among makers to putting up the bismuth preparations in greater quantities than 1 oz. ampoules because of the results of the entry of air each time the vessel was opened and the danger of the metal sinking to the bottom. He thought this objection was fully justified.

Dr. **Herschell** said he began to use bismuth 18 months ago, the neotrepol preparation, which contained 96 per cent. of the metal. He had, however, abandoned it for mercury because it caused so much stomatitis, probably largely because most of the mouths of his patients, mostly Hindoos and Chinese, were very dirty. He agreed, however, that bismuth had a quicker and more certain effect in rendering a positive Wassermann negative. He asked how bismuth could be used for a case of tabes without causing stomatitis.

Mr. **Wansey Bayly** said his use of bismuth had been limited to neotrepol. In a year he had experienced no difficulty in regard to stomatitis. At present he was treating a case of tabes with it, and was pleased with the result, for the plantar reflex had returned, and the patient no longer had the feeling of walking on a soft carpet; in addition, the areas of anæsthesia and hyperæsthesia in the legs had vanished. He had not tried bismuth alone for early cases of primary or secondary syphilis. Bismuth was well worth trying.

Dr. A. M. H. **Gray** said his experience with bismuth preparations was somewhat limited. He found that the ordinary out-patient would not stand the large doses which some people recommended. Most mouths would not tolerate more than 2 c.cm. of neotrepol in ten injections. In one or two cases severe stomatitis compelled a cessation of the treatment. Cases in which N.A.B. or stabilarsan was interspersed with salvarsan showed improved results in comparison with those in which mercurial treatment was used in alternation. He quoted a case which was very intolerant to both arsenic and bismuth but who had no toxic symptoms and was greatly improved on luatol.

Dr. **Margaret Rorke** said patients complained definitely of pain after neotrepol. During the last six months she had used quinine iodo-bismuthate, and it gave very good results. In conceptional syphilis of old standing in women she found alternations of bismuth with arsenic very useful in lessening the danger of arsenical poisoning at those times.

Major **de M. Peyton** said naval medical authorities found that in a number of cases of active primary and secondary syphilis treated by bismuth preparations alone not only did not the positive Wassermann become negative, but secondary signs of the diseas supervened in spite of intensive bismuth treatment But in some cases treated with arsenical preparation in which arsenical complications occurred, the resor to bismuth was extraordinarily successful. At St Thomas's clinic much disappointment was felt at th lack of destruction of the spirochætes in active syphili by bismuth; but they had formed a high opinion o luatol, which he regarded as an excellent antisyphiliti remedy. But the pain it caused had forced its abandonment. Entry of air into the bottle containing th preparations could be prevented by using rubbe capped bottles. Bottles of 25 c.cm. capacity wer used. The bottle was inverted and the contents kep in a state of agitation while the syringe was receivin its supply, and the rubber cap immediately seale the neck when the supply had been withdrawn.

Major **Frost**, in reply, said some organic salts seeme to be more effective than others. Perhaps he did no meet with much stomatitis because soldiers were s carefully nursed and looked after in regard to their teet and mouths. The presence of the black line along th teeth margins was not an indication for stopping th treatment. He felt that bismuth, arsenic, an mercury were three drugs which depended for the action on their conjunction with some substance in th body, and the complemental substance to one of the might be missing in some patients, for whom, therefor one of the other three metals would be efficacious.

An Interesting Case.

Major **Peyton** showed a case of Chronic No progressive Anterior Poliomyelitis of Specific Origi The patient, a man aged 57, contracted syphil

35 years ago, and his treatment consisted of a 90 days' course of mercury pills. Eleven years ago there was a decrease of muscular power, with some wasting in the arms and legs. In 1916 he had three injections of "606," after which his walking improved. Three years later he again had three injections of "606," but no subsequent treatment of any kind. The condition was apparently stationary until a year ago, when he had occipital headaches and experienced a warm patch between the scapulæ, and he has now lost all power in both thumbs. Deep reflexes are exaggerated, the plantar response is flexor, but sensation is normal and there is no sphincter disturbance.

DERBY MEDICAL SOCIETY.

A MEETING of this Society was held on April 10th, Mr. J. E. KILVERT, the President, in the chair, when a paper was read by Dr. JOHN A. WATT on

Intrathoracic Tuberculosis in Children.

Dr. Watt said it was now generally accepted that tuberculosis in adults developed from an infection in childhood, and that all efforts at prevention should begin in early years. Investigations by the Royal Commission and others showed that human tubercle bacilli were almost constantly present in pulmonary and bronchial gland tuberculosis, indicating that infection occurred from human sources. The clinical features of intrathoracic tuberculosis were dealt with in three main forms—viz., (1) general or infantile, (2) hilum or juvenile, (3) adult types. Tuberculosis in infancy showed a strong tendency to generalisation and was most fatal at this age. The bronchial glands were invariably involved and were usually the chief entres of the disease. Progressive caseation occurred, hen dissemination, and miliary tuberculosis or neningitis was the termination. The typical form in nfants was acute miliary tuberculosis; other varieties vere tuberculous bronchitis and caseous pneumonia. When school age began the disease passed into more atent and chronic forms with a low death-rate. The ommon form was a benign and latent glandular nfection contracted in infancy. The primary lung ocus gave rise to secondary infection of the thoracic lands, but the disease might spread out into the arenchyma of the lungs. This condition was known s hilus tuberculosis, and by the French as "glandulo-ulmonaire." The physical signs of hilus disease ere discussed and most importance was attached to ara-vertebral dullness, altered breath sounds, and 'Espine's whisper sign. Radiography was invaluable, nd the presence of tubercle bacilli clinched the iagnosis. A case of open tuberculosis in a household ad a sinister influence on young life. Investigations owed that in such nearly all infants were infected the first four years of life. Hilus tuberculosis was sually a mild disease and nearly all cases recovered. might smoulder on for years often unrecognised, d there was weighty evidence accumulating that lus tuberculosis in children might develop at olescence into the adult type as we knew it. Adult pes, apical, basal, or lobar, were not common before e age of 12 but increasingly frequent afterwards. ey were easily diagnosed, tubercle bacilli were ually present, and a radiograph showed the extent the disease.

Dr. Watt tabulated 165 cases of intrathoracic berculosis admitted to the County Sanatorium ring the last four years. There were 117 cases of us tuberculosis with one death, and 48 cases of ult forms with 18 deaths after an average period of ee years. Fifty per cent. of the hilus cases had ercle bacilli present and nearly 80 per cent. of the lt cases, examination being made by the Ellerman-andsen method. Lantern slides were shown of iographs illustrating the main types.

A discussion followed, in which there took part S. BARWISE, NIVEN ROBERTSON, H. BARBER, PARRY-JONES, F. G. LESCHER, and P. HEFFERNAN.

Reviews and Notices of Books.

MEDICINE, MAGIC, AND RELIGION.

By W. H. R. RIVERS, M.D., D.Sc., F.R.S. Preface by G. ELLIOT SMITH, F.R.S. London: Kegan Paul, Trench, Trübner and Co., Ltd.; New York: Harcourt Brace and Co., Inc. 1924. Pp. 147. 10*s.* 6*d.*

How great was the loss sustained by psychological medicine through the untimely death of Prof. Rivers is proved by the publication in book form of his FitzPatrick Lectures by the International Library of Psychology, Philosophy, and Scientific Method. The lectures were delivered before the Royal College of Physicians of London in 1915–16, and were reported in full in THE LANCET, where they were seen to display in a simple manner the intimate relations between primitive medicine and magic and religion. The author takes the widest possible survey of the ways and thoughts of primitive medicine-men, and while in many places the deductions are distinctly original, the copious references to other authorities show how well Prof. Rivers was documented. Nowhere is the volume padded out by quotations; for example, he does not consider the kind of magic usually known as sympathetic magic in any detail at all, but refers the reader to the magic art of Sir James Fraser and his own great monograph on the history of Melanesian Society. The work of A. B. Ellis, E. im Thurn, C. G. Seligman, and J. Roscoe comes in for similar allusive treatment.

Prof. Elliot Smith points out that in the last years of Rivers's life his views were undergoing a change in the direction of a fuller recognition of the part played by the diffusion of culture in the development of custom and belief. The first two chapters of the book, which represent the first two lectures, were written after Rivers's valuable work at the Maghull Military Hospital, where for a considerable period he investigated the mental effects on soldiers of trench warfare. He then found a remarkable analogy between the methods employed in the hospital for the diagnosis of psychical disabilities and those which he had used himself in Melanesia when investigating the social and religious practices of primitive peoples; and in the second chapter the section treating of the attribution of disease to infraction of taboo, quoted from a book by Mr. A. M. Hocart and himself recording their studies in Mandegusu, indicate how keenly Rivers was interested in the effects of cultural diffusion upon the psychology of races. The last chapter of the book, entitled "Mind and Medicine," considers at length an important principle of psychological medicine—namely, psychical determinism—and contains the author's views of the work of Freud, of whom he says that more than any other investigator he has emphasised the mental factor in disease. The early relationships between man and medicine are shown in this chapter to be bound up with the process by which medicine grew out of magic and religion. This closing essay formed the subject of an address delivered in 1919 at the John Rylands Library in Manchester, and makes a valuable round-off of the whole subject, indicating well Rivers's own development of outlook.

SURGICAL EMERGENCIES.

By RUSSELL HOWARD, C.B.E., M.S., F.R.C.S. Eng., Surgeon, London Hospital; Senior Surgeon, Poplar Hospital. London: Edward Arnold and Co. 1924. Pp. 216. 7*s.* 6*d.*

"Emergency surgery has therefore become decentralised and the general practitioner . . . is now called upon to perform operations which a short time ago were in the hands of the surgeons of the great hospitals." The truth of this statement in the author's preface cannot be denied, though we may disagree with the reasons he assigns therefor. If operative treatment at local small hospitals is to be of a high standard, then the presentation in concise form of usually accepted methods of diagnosis and treatment is urgently needed. Since such a handbook as this is designed to reach men in country practice who have little if any time to check the truth or soundness of what they read by wide visual experience of other methods, it is more than ever essential that the methods of diagnosis and the choice of operative procedures should be above reproach.

We sympathise with the motives which prompted Mr. Howard to write this book, but confess to disappointment with some of its contents. The book contains a very great deal that is admirable in every way—e.g., the chapters on abdominal injuries, head injuries, and the urethra are full of sound advice. But other sections are less satisfactory. In dealing with blood transfusion, there occurs the sentence: "In cases of emergency, however, the risk of producing intravenous clotting may be taken" (p. 13). When the testing of blood groups (not explained in the text) is so simple a matter, it must border on culpable negligence to give a blood transfusion if the groups of donor and recipient are not known. Again, in discussing acute osteomyelitis, Mr. Howard says: "The physical signs are a deep-seated brawny swelling near a joint." He does go on to say that the diagnosis may be made by a point of exquisite tenderness; but the whole aim and object of the surgeon should be to diagnose the case long before swelling occurs, for the prognosis in such neglected cases is appalling. In the treatment of this condition the author still scrapes out the marrow and with it the endosteum with a sharp spoon, and to complete matters swabs the cavity with pure carbolic. The lesson taught by Nichols in Vol. II. of Keen's Surgery has evidently not yet been accepted by him. On p. 41, where the cardinal symptoms of acute intestinal obstruction are enumerated, pain is not mentioned, though on p. 65 it is just discussed. Persistent vomiting is stressed as a most important symptom; but in large intestine obstruction vomiting does not come on for at least 48 hours, and the diagnosis by enema results is now recognised as unreliable. These two conditions—acute osteomyelitis and acute obstruction—have been singled out for criticism because the patient's chances of recovery depend to so small a degree on the technical skill of the surgeon's carpentry, and almost entirely on his skill as a diagnostician, and the advice concerning the diagnosis of these conditions seems rather to perpetuate old fallacies than to offer the lessons of modern practice.

The serious need for the better education of the operating general practitioner in the country is undoubted, and books of this type should exert a widespread influence—for Mr. Howard's is a good book, though we have considered it right to make certain criticisms. For it is even more important that the advice given here should be up to date than in text-books for the surgeon-consultant, who has ample opportunities of discussing technique with his fellows. In many respects, as we have noted, Mr. Howard's book is an excellent guide, and will doubtless be of real service to surgeons in general practice.

HEALTH BUILDING AND LIFE EXTENSION.

A Discussion of the Means by which the Health Span, the Work Span, and the Life Span of Man can be Extended. By EUGENE L. FISK, M.D., Medical Director, Life Extension Institute of New York. New York: Macmillan Company. 1923. Pp. 521. 16*s*.

THE work of the Life Extension Institute of New York is becoming increasingly appreciated by medical men; and this volume attempts a philosophical review of the factors of individual hygiene, of industrial hygiene, and of public health, in their relative importance, and of the possibilities of measures for reducing the tax of sickness on life. The scheme of the book is clear. Part I. deals with the physical state and the extent of disabling sickness, the possibility of reducing this, and of extending the cycles of life, of health, and of work, and the value of periodic examinations and health supervision. Part II., whose contents fall under the general heading of industrial health and working capacity, gives a review of poisons, of food deficiency and excess, psychical influences, and, indeed, of nearly all the known enemies to health; while in Part III., federal, state, community, and industrial health organisations are outlined and a special chapter is devoted to "drives" against individual diseases.

The volume contains a vast mass of information, clearly stated, and most useful and stimulating to the reader who can distinguish between facts of small and of great importance, and between inferences of greater and less degrees of probability; no physician or medical officer of health can read it without receiving useful stimuli to a wider outlook on the problems of his professional life. In the earlier part of the book there is an elaborate statistical discussion of the increasing mortality in the United States at higher adult ages, and on the increasing mortality from some degenerative diseases, the statistical basis of which is not above suspicion. But the main fact remains that such diseases are excessive, and might be decreased; though it may be doubted whether experimental results with animal tissues justify the "philosophical validity of the postulate that human life may be indefinitely extended." The illustrations of possible savings from periodic examination and health supervision in university life are striking, and it is certain that increasing use of this means of diminishing sickness is advisable; but examination and supervision in adult life do not cover the major problems, for, as is urged by Sir A. Newsholme in his Harveian Lecture (January, 1921), "the chief and most promising line of attack on the disabling diseases of middle life and even of higher ages consists in the adoption of all known preventive and curative medical measures in childhood and in youth, adolescence, and early manhood. It is chiefly in these years that the bill is incurred which has to be paid two, three, or four decades later." The truth of this statement is evident when we recall the rôle of various infections, and especially of the virus of rheumatic fever and o syphilis in causing arterial and other diseases.

The sketch of official health agencies in the Unite States is most instructive, and should be consulte by British readers. There is sound sense in th comment on medical education as still commonl conducted, that students have as their ideal th treatment of disease rather than the maintenanc of health. A great deal is said to them about preven tive medicine, but they visualise it chiefly as sani tation and community hygiene. Personal hygien is seldom adequately taught. The suggestions o mutual benefit and group insurance are also worthy o careful study. In the United States action is pro ceeding largely on the basis of individual industries with us it is progressing on commercial lines. I the chapter on special drives against disease attentio may be drawn to the excellent discussion of th venereal disease problem. The value of the volum is increased by the admirable bibliography attache to each of its three parts.

COMMON INFECTIONS OF THE FEMALE URETHRA AN CERVIX.

By FRANK KIDD and A. MALCOLM SIMPSO London: Humphrey Milford, Oxford Universit Press. 1924. Pp. 191. 7*s*. 6*d*.

THIS book is a description of the cases investigat by the authors in the female V.D. department the London Hospital from January, 1917, till la 1920; 650 cases in all appear to have been see of which 237 only were gonococcal cases; 50 childr came in the series, and 21 of the patients we pregnant and also infected with gonorrhœa. T numbers investigated therefore were not large.

It is an interesting book, somewhat unequal quality. In the field which Mr. Kidd has made own he is unsurpassed. Therefore the section examination of the urethra and the treatment of urethritis and of bladder infections is excellent, and will be of the greatest value to general practitioners, for whom the book seems to be intended. As an addition to the literature of gonorrhœa in women it must be taken less seriously—the number of cases seen is too small, and according to present ideas the cures are too easily come by. Everyone working with infected women in large numbers knows that with modern technique negative films and cultures are obtained in a subacute case in a short time; but it is also a well-recognised fact that relapses—not always due to reinfection, as Mr. Kidd seems to believe—are frequent. No after-history is given of any one of the 21 pregnant cases "cured before parturition" (p. 81), and there is no note as to the clinical or pathological condition a month or six weeks after delivery, which is regarded by many observers as the real test of cure in such cases.

A note on primary syphilis of the cervix gives rise to some doubt as to the amount of treatment the authors consider necessary (pp. 74 and 75): "the primary stage, when abortive treatment by salvarsan is possible" might be taken to indicate that the authors think one or two injections of salvarsan will completely rid the patient of syphilis. We feel sure that the last thing that the authors intend is to encourage half-hearted treatment of syphilis, which certainly causes the lesion to heal, but inevitably leads to relapses later and to the birth of infected children. There is an interesting section on treatment of gonococcal arthritis in which the authors rightly deprecate undue or unskilful massage and insist on the value of movements by the patient. An admirable chapter on the bacteriology of the region by Dr. Western, and another on ophthalmia neonatorum by Mr. Mayou, add to the value of the book; and a chapter on prophylaxis against V.D. will be of use to many practitioners. A few very good colour plates are included.

PSYCHIATRY.

Mental Diseases. A Text-book of Psychiatry for Medical Students and Practitioners. Third edition. By R. H. COLE, M.D. Lond., F.R.C.P., Physician for Mental Diseases to St. Mary's Hospital. London University Press. 1924. Pp. 356. 15*s.*

Insanity in Everyday Practice. By the late E. G. YOUNGER, M.D., M.R.C.P. Fifth edition, revised and edited by G. W. SMITH, O.B.E., M.B., Ch.B. London: Baillière, Tindall and Cox. 1924. Pp. 134. 5*s.*

CERTAIN changes have been made in the new edition of Dr. Cole's text-book. The principal alterations are a much elaborated chapter on the pathology of general paralysis, a rewritten description of the cerebro-spinal fluid, and a new section on the anxiety neurosis. The value of the book from the point of view of the student, for whom it is primarily intended, depends chiefly on the excellent descriptions of the clinical features of insanity, and in these no changes have been made. Although minor additions have been made in the chapter on treatment, a short paragraph reflecting the somewhat nebulous outlook of 20 years ago remains the only reference to the vaccine and other specific treatment of chronic septic states, and the possible influence of focal sepsis, and the importance of searching for it, are barely mentioned. Although such knowledge is, perhaps, not essential for examination purposes, it is surely of use to impress on the student that a bodily cause for mental derangement should always be sought for, and that a better understanding of immunology may eventually remove certain types of insanity from those large categories in which ætiology is still conjectural and treatment merely expectant. This omission detracts hardly at all from the value of an excellent manual, and we note it only because a dogmatic enumeration of the stereotyped factors in ætiology, with no adequate confession of our gross ignorance, and no hint as to the lines along which progress is likely to be made, must be apt to produce in the reader an attitude of passive acquiescence in a mystery, from which we must escape if psychiatry is to be advanced.

The late Dr. Younger's short manual on Insanity in Everyday Practice has been revised by Dr. G. W. Smith, his aim having been to bring it into accordance with more recent views of mental disease without altering its general purpose or character. The original author's intimate and readable description of the outward features of insanity are combined with much practical advice as to the immediate steps to be taken in dealing with various types of patient, and warnings as to pitfalls in the difficult situations which cases of mental disorder in general practice may provide. Actual experience of mental hospital work, however brief, can alone arm the practitioner adequately against these difficulties, but in so far as mere reading can be of service, this small volume will be found one of the most helpful of its kind.

VERTEBRATE ANIMALS.

A Manual of Land and Fresh-Water Vertebrate Animals of the United States (Exclusive of Birds). By HENRY SHERRING PRATT, Professor of Biology in Haverford College, Pa. Philadelphia: P. Blakiston's Sons and Co. Pp. 422.

THIS work deals with the Fishes, Amphibians, Reptiles, and Mammals of the United States and Southern Canada. It has been written to furnish students of zoology and geographical distribution with diagnostic descriptions of the land and fresh-water vertebrate animals of that part of the world, and numerous analytical keys are given by which the animals can be identified. To an extent it is a compilation of many other works dealing with special groups, and a full bibliography of the works referred to is given. It is well illustrated and all the illustrations have a bearing on the diagnostic points referred to in the text. In the section dealing with mammals, the splitting up of the various members of the family Muridæ into species and subspecies seems to have been carried to excess, but it speaks well of the thorough way in which the local races have been worked out by American zoologists. It is a book which should prove a valuable help to collectors and systematists on the particular branch of zoology with which it deals.

PATHOLOGISCH-PHYSIOLOGISCHE PROPÄDEUTIK.

Von MAX BÜRGER, A.O. Professor der Inneren Medizin und Oberarzt an der Med. Universitätsklinik, Kiel. Berlin: Julius Springer. 1924. S. 342. $2.90.

THIS book may be regarded as the type of the pathological text-book of the future. It contains no horrifying pictures of monstrous births nor lengthy descriptions of "histological appearances." The author has written from the standpoint that pathology is morbid physiology; this being the case, he has abandoned the static outlook of the old-time pathologist for the dynamic attitude of the physiologist. Such a book could hardly have been written until within the last few years. The General Pathology, edited by Pembrey and Ritchie, and published in this country in 1913 (of which a further edition is long overdue), was the first, and heretofore almost the only, work of the sort. Comparison of the two books is cheering in the indications provided of real advance in the knowledge of morbid processes within the last ten years. Prof. Bürger has been ambitious in his aim; all the systems of the organism are dealt with, and always from the standpoint of function. For the reader brought up on things in bottles or slices of tissue on bits of glass it will be difficult going; all of it is not, perhaps, entirely profitable, and much of it will have to be recast in the near future. None the less, there can be no doubt as to the high value of works of this sort in opening the way to a proper understanding of the processes underlying disease. An hour's intelligent study of this volume should do more to lead to such an understanding than weeks of grinding at the histology of tumours. Practically all the references are to German publications. A wider outlook would have prevented the appearance of such anachronisms as the inclusion of the virus of yellow fever among the unidentified filter-passers.

THE APOTHECARIES' GARDEN AT CHELSEA.
Second edition, revised and enlarged. By F. DAWTREY DREWITT. London: Chapman and Dodd, Ltd. Pp. 136. 5*s.*

IN a second edition Dr. Drewitt has revised and enlarged his charming little romance of the "physic garden" at Chelsea, the additional notes on Linnæus being particularly interesting. We reviewed the first edition at length recently (THE LANCET, Jan. 20th, 1923), so that no full notice of the work will be required by our readers, whom we again recommend to make themselves acquainted with the story of this small oasis in the brick desert of London. The closing chapter on the trees to be found in the Apothecaries' Garden should open the eyes of Londoners to the variety of trees which are to be found, not only by going to the Garden, but by strolling in the metropolis; trees may be there seen which are generally associated with the narratives of distant travel. The suggested origin of the yew tree in our churchyards is interesting as showing that 2000 years ago contractors would use substitutes when they could do so with impunity.

JOURNALS.

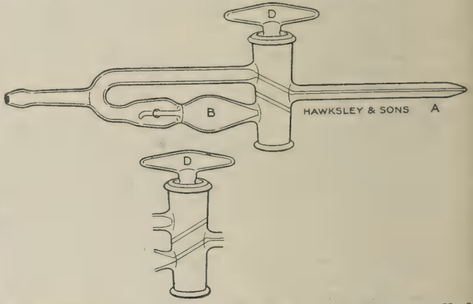
JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXVII., No. 2. Pp. 145–215. April, 1924.—The Constituents of Serum Useful in the Cultivation of the Gonococcus, by C. E. Jenkins (Salford). Blood is helpful chiefly in primary cultures and early subcultures; serum or plasma contains the needful substances, one of which, peculiar to blood, is destroyed by heating to 65° C., while the other, found also in muscle, resists heat up to 100° C. A convenient plan of sterilising slaughter-house serum by warming with acid and chloroform is described.—The Hæmophilic Bacteria of the Normal Throat, by J. H. Dible (Manchester). Examination of the throats of 100 normal persons revealed bacteria which required hæmoglobin in the medium in 47 cases. Critical examination showed that in 30 of these the organism corresponded with Pfeiffer's influenza bacillus. In 20 cases other hæmophilic organisms were present, most of which were hæmolytic.—Acid-fast Bacteria as a Source of Vitamin B, by S. R. Damon (Baltimore). A growth-stimulating substance analogous to vitamin B is produced by the timothy grass, Möller's and the smegma bacillus.—Compensatory Hypertrophy of the Suprarenals, by A. E. Boycott and C. H. Kellaway (London). Removal of one adrenal in young rabbits does not lead to compensatory hypertrophy of the other gland.—Non-specific Training of Anti-Body Production, by V. R. Khanolkar (London). Preliminary doses of Gaertner's bacillus increase an animal's capacity to produce agglutinins to that organism: so do preliminary doses of *B. coli*, paratyphoid B, *B. pyocyaneus*, and sodium cinnamate. But injections of staphylococci, ricin, horse serum, or yeast do not have this effect.—The Titration of Diphtheria Toxin and Antitoxin by Flocculation Methods, by A. T. Glenny and C. C. Okell (London). When people began to look carefully at what they were doing, they found that mixtures of diphtheria toxin and antitoxin are opalescent or flocculate at the point corresponding to neutrality by the usual animal test. The method, which has been exploited particularly by Ramon, has the advantage of giving quick results and of being economical. With most ordinary toxins the values found correspond with those given by subcutaneous or intracutaneous guinea-pig tests, but this is not always the case. The process, therefore, cannot replace the classical direct methods.—The Pathology of Iron Deficiency and Cotton-seed Poisoning in Pigs, by J. P. McGowan (Aberdeen).—Metastatic Carcinoma of the Pituitary Gland with Diabetes Insipidus, by A. Piney and I. Coates (London). A secondary growth from a breast cancer completely destroyed the partes posterior and intermedia of the pituitary; there was great polyuria. The pars anterior remained intact, and the case strongly supports the view that the polyuria of pituitary origin comes from the unopposed action of this portion of the gland.

Messrs. Baillière, Tindall and Cox inform us that the new edition of "Aids to Physiology," reviewed in our columns on Feb. 9th (p. 290), should have appeared under the sole authorship of Dr. R. A. Krause, for although Prof. J. Tait wrote the previous edition in collaboration with him, Dr. Krause is entirely responsible for this.

New Inventions.

AN AUTOMATIC PIPETTE FOR HÆMATOLOGICAL PURPOSES.

THE great difficulty of attaining accuracy in counting blood corpuscles has probably been encountered by all laboratory workers and the pipette which is here illustrated serves to obviate personal errors. The chamber B serves for the reception of the diluting fluid, which is sucked up to fill that chamber; any excess passes through the fine capillary and is trapped in the further chamber. The tap D is now turned into the position shown in the upper illustration and the excessive diluting fluid contained in the stem A can be expelled by blowing through it. The stem is then cleaned with alcohol and ether in the ordinary way. Blood is now sucked into the stem A and through the bore of the tap. If the tap be now turned through an angle of 45° the blood in the stem is cut off. The tap is then turned through an angle of 45° and the chamber B is brought into communication with the blood when the two fluids can be expelled into a suitable small vessel and shaken. The apparatus is available for red corpuscles, leucocytes, and hæmoglobin. In the case of red corpuscles the chamber B plus the tap contain 100 parts of diluting fluid while the stem contains one part of blood. In the case of the leucocytes the figures are 10 and 1 respectively. The pipette for measuring 20 c.mm. of blood for the estimation of hæmoglobin is similar but simply possesses a plain U-tube above the tap. Cleaning of the apparatus is carried out by placing the rubber tube of the mouth-piece on the end of the stem A and sucking in and expelling distilled water, &c. The pipette, I think, avoids the difficulties which were associated with the Hirschfeld model, though somewhat resemblng that instrument.



The pipette has been made for me by Messrs. Hawksley and Sons, of Wigmore-street, London, W.

A. PINEY, M.B., Ch.B.Birm., M.R.C.P.,
Director of the Institute of Pathology, Charing Cross Hospital.

THE LANCET.

LONDON: SATURDAY, MAY 3, 1924.

MYOPIA AND THE CHOICE OF A CAREER.

THE report of the Council of British Ophthalmologists, published in the *British Journal of Ophthalmology* for April and reproduced in another column, is of the first importance. It is mainly concerned with the question how far myopia should be treated as a disqualification for candidates for scholarships and teacherships under local educational authorities, but it may also be taken as an authoritative guide in assisting parents to decide on a career for short-sighted children. The most important recommendations are as follows :—

> "A child of 11 with three or more dioptres of myopia in the better eye should be rejected for scholarship training.
>
> At the age of 15 those with more than four dioptres of myopia in the better eye should be deemed unfit to train for the teaching profession.
>
> Candidates for entry into training colleges, who are, as a rule, about 18 years of age, if they have more than five dioptres of myopia in the better eye should be rejected."

These recommendations are calculated to cause a good deal of heart-burning both among parents and among clever children who, though they are short-sighted without spectacles, see normally with them and have never had any trouble with their eyes. Myopic children, in fact, are very apt to be bookworms, and while it may be difficult to say which is cause and which effect, the association is an instance of a vicious circle. The fact remains that many of these children, from all points of view except that of their eyesight, would seem peculiarly fitted both for scholarships and for the teaching profession.

What, then, is the justification for these recommendations ? It is to be found in the following facts : (1) That in later life cases of weak sight are found to occur in those with myopia and myopic astigmatism in far greater proportion than in any other state of refraction ; (2) that this condition is not congenital, but is apt to become more pronounced during the years of adolescence, especially in children and adolescents who are unusually studious. It is perfectly true that there are a large number of myopes, of even moderately high degree, who seem to suffer no inconvenience and whose eyes do not give out even in later life under the stress of employment involving continuous close work. In legislating, however, we must have regard to the greatest good of the greatest number, and though it may be perfectly true that there are many myopes, even of comparatively high degree, who would benefit both themselves and the community by taking up studious careers, and would suffer neither inconvenience nor even partial loss of sight later on, unfortunately in early life we have no means of separating these from the others of whom the opposite is true. In order that the authorities, and parents themselves, may realise how great is the risk in encouraging these myopic children to train themselves for employments involving continuous close work, we commend the careful study of some figures published a few years ago by Mr. BISHOP HARMAN.[1] From his private case-books, he tells us, he picked out all those myopes of over 3 D. who were between the ages of 20 and 60 years, cases of monocular myopia being excluded. The total number of myopes thus collected was 480. The cases were separated into two main sections : (1) Habitual close workers, and (2) those not so engaged. In each section there was an age-grouping in decades, and also in groups, according to the grade of their myopia—from 3 to 5 D., 5 to 10 D., and over 10 D. In cases of astigmatism the average of the four meridians was taken as the degree of myopia. Note was made of the events of their working history, the occurrence of indications of abnormal stress in work, breakdowns which entailed cessation of work, or change of work where that was possible, or a continuance of the same work under modified conditions ; and lastly, of direct evidence of damage to the eyes. Of the 480 cases investigated, 38 per cent. were engaged in habitual close eye work, and 62 per cent. were not occupied in continuous close eye work. The extent of the failure amongst the habitual close eye workers as compared with the other patients was remarkable. No less than 53 per cent. of the close workers failed at some time during their career, and of these more than one-quarter, or 15 per cent., of the total of habitual close workers sustained permanent damage to the eyesight. Amongst the myopes who were not close workers failures were few—only a total of 9·4 per cent. The fact that the majority of these (7 per cent.) sustained damage to their eyes is accounted for by the comparatively large proportion of very high myopes in this group.

Mr. HARMAN'S tables show not only the above comparison, but also that there is a gradual increase in breakdowns and damage to the eyes with the increase of age and grade of myopia. Amongst the ordinary patients there was only one case of trouble at any age amongst those with less than 5 D., but quite a number amongst the habitual close eye workers (out of 71 cases, 21 breakdowns and 3 cases of damaged sight). In the cases of myopia from 5 D. to 10 D. the figures are far more striking. Of 81 habitual close workers, no less than 40 had had breakdowns in their work and 9 had sustained permanent damage to the sight ; whilst of 118 not engaged in close work there were only 3 breakdowns and 4 cases of damaged sight. In the cases of myopia of still higher grade the figures are less comparable owing, on the one hand, to the fact that the myopia in many of these cases must have developed in comparatively early childhood and served as a warning against any employment trying to the eyes, and on the other hand, to the much enhanced risk of damaged sight in these cases, irrespective of whatever precautions are taken. These facts, as it seems to us, afford ample justification for the recommendations of the Council of British Ophthalmologists. They are in consonance with what we may term the orthodox teaching as to the dangers of close work for myopes, and although some recent authorities have attempted to throw doubt on this teaching we cannot evade the conclusion that the verdict contained in the report—which proceeds from the leaders of the ophthalmic branch of the medical profession in this country—is sound.

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[1] Transactions of the Ophthalmological Society, 1922, p. 20.

SCHOOL CLOSURE FOR INFECTIOUS DISEASE.

From time to time the parents of children away at boarding schools are agitated by the intimation that infectious disease has occurred at the school, and that in consequence the school will be closed before the date on which the term should end. No doubt in individual and exceptional instances such a precaution as school closure may prove to be the smaller of two evils. We doubt, however, whether the occasions for its application are nearly as frequent as headmasters, through their own anxiety or through the cautious counsels of their medical advisers, would lead us to believe.

The experience of the school medical service of this country appears steadily to be crystallising in a form opposed to the use of school closure as an instrument for the control of infectious disease. The arguments which apply to the procedure in its relation to the public elementary schools, both urban and rural, in this country seem to have special point in respect of boarding schools. The closure of the school involves a general dispersal of the occupants to families or communities, in many of which they will not be under any degree of careful supervision; the one original focus of infection may thus multiply itself in a number of different localities. Had the school been kept open, and had the daily medical and nursing supervision been adequate, each fresh case as it arose could, in most of the infectious diseases, have been detected at a stage before infectiousness had developed to a material degree. Moreover—and this is an aspect which appeals to the long-suffering parent, though he accepts the prevailing practice with singularly little grumbling—the child would receive the term's schooling contracted for and paid for, but only in part received under conditions of premature closure. Undoubtedly the present practice is based, not on closure as a true means of controlling infectious disease, but on the lack of pains taken in many boarding schools to evolve an effective machinery for the daily supervision of the health of the pupils. The happy-go-lucky attitude which enters so much into the spirit of the recreations of the boarding school permeates the attitude of the principal and of the staff towards the physical health of the inmates. Probably quite a small proportion of the masters have any knowledge of the symptoms and signs of infectious disease approaching that acquired by the elementary school teacher, while the school nurse, with a thorough grounding in infectious disease, who is so closely linked up with the public elementary school, is, on the whole, distinctly more expert in this subject than is the average matron at a boarding school. We believe that some degree of concentration on this aspect of the control of infectious disease in residential schools would result in a material drop in the frequency of premature closure.

But while the experience of school medical officers in the service of local authorities is in general increasingly unfavourable to closure as a preventive measure against the spread of disease, it must be confessed that their practice does not always march with their precept. It is not uncommon for school medical officers to advise closure of an elementary school department on account of infectious disease when the attendance drops to a low level—perhaps in the neighbourhood of 50 per cent. of the normal—such closure being largely for the convenience of the education authority, and to save loss of grant from the Treasury on account of low attendance rather than because the medical officer has any faith in closure as a means of controlling the outbreak. It needs something of the casuist to draw any clear distinction between the school medical officer acting on such a basis and the headmaster of a boarding school who closes his school on account of infectious disease. Is there not scope for both to review their methods and to define the procedure which will make for the greatest good of the children under their supervision?

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TUBERCULOSIS OF THE LARYNX.

The Medical Research Council has just published[1] an instructive account by Sir StClair Thomson of his experience of laryngeal tuberculosis at the King Edward VII. Sanatorium at Midhurst over a period of ten years. During this period 2541 cases of pulmonary tuberculosis were admitted, and among them were 477 cases of tuberculous invasion of the larynx. The author adopted the happy method of passing all his case-cards and notes to an independent worker, Dr. D. A. Hutcheson, who compiled the figures, tables, and averages without any suggestion from anyone as to the conclusions which might be anticipated, thus avoiding to a very great extent the personal bias inevitable in all human undertakings. The conclusions to be drawn from the statistics thus analysed do not, as a whole, differ greatly from the many similar figures which have previously been compiled. In one respect, however, there is a marked difference; while numerous tables compiled up to ten years ago show that laryngeal invasion was two to three times more common in men than in women, the Midhurst figures make the incidence almost exactly equal. Sir StClair Thomson points out that most of the women admitted to Midhurst are wage-earners who follow the same, or similar, employments as the men—viz., clerks, typists, teachers, &c.—and concludes that any increased susceptibility of the male is due to social, and not to sexual, differences. Before 1905 the post-mortem records at the Brompton Hospital showed twice as many cases of tuberculous laryngitis in men as in women, but since 1908 the proportion has been almost identical; the question arises, is this the result of the change of habits and occupation among women? For the last five years of this investigation, involving 1456 patients, notes were made of the condition of the nares and pharynx; the conclusion is that affections of this region are no more common in those with laryngeal invasion than in those whose disease is limited to the lungs; also, though it would be difficult to make a comparison of the nose and pharynx in sanatorium patients with an equal number of the healthy public, the author's impression is that trouble in these regions is no more common in a sanatorium than out of it. Three cases of intrinsic cancer in phthisical patients provide interesting examples of the difficulty of differential diagnosis. The author concludes that epithelioma of a vocal cord is a very slow-growing tumour; if it is so limited as to be difficult to recognise, a delay of two or three months in clearing up the diagnosis can do little harm. There is also a unique case of aspergillosis of the lungs and larynx, the latter presenting a typical picture of tuberculosis; recovery was rapid under sanatorium treatment.

So much for the pathology of laryngeal tuberculosis. The chief feature, and the great value, of Sir StClair Thomson's report lies in the emphasis laid on the remarkable benefit which the tuberculous larynx derives from sanatorium régime, including good air, regular rest, diminution of voice use, control of cough, and cessation of alcohol and tobacco. The tuberculous larynx, as seen in a clinic among town-dwellers, is usually in a condition of general congestion, which makes it difficult to distinguish the deposits of disease, angry granulations being bathed in abundant pus. All this subsides in sanatorium without local treatment, and it soon becomes evident that 20 to 50 per cent. of the unhealthy appearances were added conditions, the result of hygienic unrighteousness. Practically all the laryngeal cases at Midhurst were "put on whispers"; the patient is told to speak only on the lips, and is warned against using a forced whisper or speaking at all out of doors or at table. Of the 477 laryngeal cases, 336 had no other special treatment, and of these 50 cases were cured. Complete silence, with the use of writing block and pencil, is rightly recognised to be a severe measure; it was reserved for recent and acute cases, especially of the glottic margin, and only for such as offered a fair prospect of cure; it was seldom prescribed for a longer period than six months, for if the condition did not clear up within that time it was recognised as unpromising and put on to "whispers" or, in some cases, treated by the galvano-cautery. Silence was prescribed for 67 patients, of whom 23 were cured. The only active method of local treatment employed was galvano-cautery puncture; this was used when the general conditions were favourable and the spontaneous healing, after making progress, appeared to be slow or stationary. Local anæsthesia and the "indirect" method were always employed, two to six punctures were made at a sitting, and never more often than once a month. In all, 74 cases were considered suitable for this method of treatment, and of these a cure was obtained in 46. Thus of the 477 cases of laryngeal tuberculosis, 119 (24·9 per cent.) were cured, 73 by restriction of voice use, and 46 by cautery puncture, in addition to the sanatorium régime. This is, as Sir StClair Thomson remarks, a result which is very encouraging, when compared with Sir Morell Mackenzie's statement of 50 years ago that "of all the cases that I have ever seen, I only know of four in which I have reason to believe that the disease was entirely arrested." The direction in which further progress can be made lies chiefly in earlier diagnosis and more prompt resort to sanatorium, and especially in a general recognition of the fact that persistent hoarseness requires expert investigation. A comment upon a sentence in a recent annotation in our columns is curious, for this report lays stress on the difference between present-day methods and results when compared with the narrow outlook and hopeless results of a generation ago.

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[1] Special Report Series, No. 83. H.M. Stationery Office. 2s. 6d.

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AN IMPROVED ACETONE-PICRATE PROCESS FOR INSULIN.

Certain modifications of the acetone-picrate process for the preparation of insulin, described by Dr. E. C. Dodds and Dr. F. Dickens in The Lancet of Feb. 16th, 1924, p. 330, have been published by these authors in the April number of the *British Journal of Experimental Pathology*. That watery extracts of the pancreas could yield active material was known from the beginning of work on insulin, since Banting and Best's original method consisted in a watery extraction of pancreas, and the first preparation of active substance was obtained in this manner. When tried on a large scale, however, the yield was so poor as compared with the alcohol extraction process that the method had to be abandoned. Best and Scott state that out of some hundred experiments their best yield obtained by aqueous extraction was only a quarter of that obtained by their alcohol process. Two causes of difficulty arise: (1) The inhibition of tryptic action; (2) efficient separation of insulin from the relatively enormous mass of protein. The authors state that the first cause of loss was reduced, and the second difficulty completely overcome, by the method described by them in our columns. Summarised briefly, the method consisted in extracting the pancreas with 1 per cent. formic acid, and precipitating the proteins and insulin from the resulting solution by means of picric acid. The picrates were then extracted with acetone. This separates the insulin picrate from the proteins, the acetone dissolving out the former and leaving the latter undissolved. The acetone solution was then diluted with equal volumes of saturated aqueous picric acid and water, when the insulin picrate separated. This was collected, washed, and converted to the hydrochloride by Dudley's method. The average yield by this method was in the neighbourhood of 300 rabbit-units per kilo of pancreas. This process was found to be difficult on a large scale owing to the time expended on the separation of the solid pancreatic tissue in the first stage. Also, in view of later experiments, it became obvious that about 40 per cent. of the yield was lost by the incomplete precipitation of the picrate by dilution. In order to improve the process it was necessary (1) to include some powerful tryptic inhibition to the extracting substance; (2) to adopt the removal of the acetone by distillation, before precipitating the picrate. Many substances are known to inhibit the action of trypsin, but the majority also act upon insulin and impair its activity. Paraldehyde is free from this objection, and its addition was found to be advantageous. The modified method differs from that described in The Lancet only in the addition of 5 per cent. of paraldehyde to the extracting fluid. Although paraldehyde is immiscible with water in this proportion, an emulsion is formed on mincing with the pancreas. The result of a typical experiment was a yield of 535 rabbit-units per kilo, as compared with 300 by the original process. As to distillation, some investigations on the properties of the picrate have shown the incompleteness of the precipitation from acetone solution obtained by the dilution method. It was thus clear that an increased yield should be obtained as a result of distilling off the acetone. This procedure was adopted with good results, and the next step was to combine both of these modifications, and this was done, the yield of a typical experiment being equivalent to 1040 rabbit-units from 1 kilo of pancreas. Although the results obtained by this process were consistently good, and the time factor was reduced to two days, there was still the objection that the first filtration was troublesome on a large scale, owing to the gelatinous nature of the material. In view of the ready solubility of insulin picrate in 70 per cent. acetone and the insolubility of protein picrates, it was an important point to ascertain whether this preliminary aqueous extraction of the pancreas was necessary, and whether picrates could not be prepared simply by grinding pancreas with solid picric acid. The application of picric acid to the original tissue, as a step in the extraction of insulin, was discussed by the authors with Dr. H. W. Dudley, who informed them that it was already under trial by him for fish islets. After a series of experiments on these lines, the authors evolved a method, of which full details are given in the article, whereby the average yield of hydrochloride was equivalent to about 1000 rabbit-units from 1 kg. of pancreas, and had a rabbit-unit of 0·5 to 1 mg. In one experiment (Experiment 24), in which 8 kilos of pig pancreas were worked up by this method, the high yield of 3·690 g. was obtained, the rabbit-unit of which was 0·25 mg., thus giving a total yield of 14,760 rabbit-units, or 1845 rabbit-units per kg. of pancreas. So far as the authors know, this is the highest yield of insulin recorded. The authors' comments on the method are as follows: 1. The use of solid picric acid not only renders the first tedious filtration unnecessary, but by converting the insulin directly to picrate reduces the time during which tryptic action may occur to a minimum, thus increasing the yield. 2. By centrifuging the acid-alcohol solution of the picrate in the last stage a large quantity of insoluble material is removed. This consists of protein insoluble in 75 per cent. alcohol, and is quite inactive physiologically. It probably consists of part of the fraction which is precipitated at an earlier stage in the Collip process. The removal of protein in this way gives a product of a very high degree of purity. 3. The rabbit-unit of the "crude hydrochloride" is in the neighbourhood of 0·5 mg., which is as low as that of the purified insulin made by the Collip process and subsequently purified by Dudley's method. 4. The time of the complete process is about one day. Small batches of up to 10 kilos have been worked up within six hours. 5. The process presents no difficulties with regard to filtration, as all the precipitates are very easily handled. The rabbit-units given in this paper are in terms of the original Toronto units—viz., the quantity required to lower the blood-sugar of a 2-kilo rabbit to 0·045 per cent. within two hours.

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HOSPITAL PROBLEMS.

The serious attention given to different aspects of the hospital problem at the conference reported on p. 923 is timely in view of signs that the provision of hospital beds throughout the country is inadequate to the needs of an increasing population, and of the financial difficulties which alone prevent voluntary hospitals from enlarging size and scope. We note in our news columns (1) that Mr. Wheatley (*v. infra*) has requested the Voluntary Hospitals Commission to inquire into and to report upon the extent of the additional voluntary hospital accommodation required in England and Wales, and the best means of providing and maintaining it; and (2) that in the Manchester and Salford districts, for example, it is computed that there are nearly two cases waiting for each of the 2444 voluntary hospital beds available. The fact that beds in infirmaries (when this word is used in the sense of hospitals under the Poor-law) could be utilised at need to supplement the voluntary hospital beds is recognised, but there is general agreement that the public will not avail themselves of such facilities under the present system of administration. There is much in common between the ideals set out by the Labour Party for the provision of a health and hospital service and the principles which have long guided those who are responsible for administration of voluntary hospitals. The admiration for the voluntary system expressed by prominent Labour leaders is sincere, and there is no reason why the coördination and coöperation for which they plead should necessarily lead to its extinction. Such conferences as that just held should be fruitful of a better understanding between those sections of the community which have as a common aim the maintenance of an efficient health and hospital service throughout the country.

Voluntary Hospitals Commission.—In reply to a recent question in the House of Commons regarding the number of persons requiring hospital treatment but unable to obtain it through lack of beds, the Minister of Health indicated that he proposed to ask the Voluntary Hospitals Commission to undertake an inquiry into the shortage of hospital accommodation. Mr. Wheatley has now remitted this question to the Commission with the following terms of reference: "The Voluntary Hospitals Commission are requested to inquire into and to report upon the extent of the additional voluntary hospital accommodation required in England and Wales and the best means of providing and maintaining it." The Commission will be communicating immediately with the Local Voluntary Hospital Committees in regard to the steps to be taken in pursuing the investigation, and the matter will also be the principal subject of discussion at the conference of representatives of the Local Voluntary Hospital Committees, which is to be held on June 18th at the Ministry of Health. It is understood that a separate inquiry will be undertaken in regard to hospital accommodation in Scotland.

Annotations.

"Ne quid nimis."

IMPERIAL SOCIAL HYGIENE CONGRESS.

This Congress, as has been already announced, has been organised by the National Council for Combating Venereal Diseases, and sits at Wembley, during the British Empire Exhibition, from May 12th to 16th. The Medical Section sits on Thursday, May 15th, with Mr. E. B. Turner as President, and as the majority of medical practitioners will be unable to spare time to attend the whole Congress, a special arrangement has been made for day tickets for this section. These can be obtained from Miss E. O. Grant, Secretary, N.C.C.V.D., 102, Dean-street, London, W. 1, at a cost of 5*s.*, this sum including entrance to the grounds. In the morning there will be a special display, for medical practitioners only, of the medical film, the Diagnosis and Treatment of Gonorrhœa in the Male. This has been produced for the N.C.C.V.D. under the direction of Colonel L. W. Harrison, who will be present to explain the film. In the afternoon, from 2.30–5, there will be a conference on the "Position of the General Practitioner in Anti-Venereal Disease Schemes." Papers are being contributed by Dr. C. E. S. Flemming, Dr. Madeleine Archibald, and Dr. Alfred Cox, and others will take part in the discussion afterwards, which will be thrown open for participation to any member of the audience.

ENDOTHELIUM AND ANTIBODIES.

Scientific literature is at times apt to be a little monotonous in form if not in substance. Eruditus makes certain observations or experiments from which he deduces a certain conclusion. And if the substance as well as form are conventionally beyond reproach, the communication may still be rather like Johnson's dictionary—very interesting, but the least thing deficient in plot. It is therefore quite refreshing to find in the *Journal of Hygiene* (Vol. XXIII., p. 355) a paper by Dr. A. Eastwood, of the Ministry of Health, of a purely speculative character which seeks to do what is so much needed nowadays to put together some of the superabundance of facts into a new and coherent general notion. Antibodies are generally assumed, perhaps as much for convenience of discussion as for an expression of absolute truth, to be "somethings" which are produced by the body in response to the stimulation of a foreign protein, the antigen. Whether these "somethings" are new proteins or old proteins impressed with new properties is relatively immaterial. As a working hypothesis it has also been fruitfully assumed that the antibodies in some way fit the antigens, giving the characteristic and apparently qualitative specificity. Dr. Eastwood rightly points out that the foundation for all this is nebulous, though he does not, perhaps, attach sufficient weight to the physiological phenomena, the influence, for example, which practice and experience has on an animal's capacity to "produce antibodies." He then points out that no one organ in the body can be regarded as the generator and source of antibodies, but that a variety of evidence indicates that they may be produced anywhere—which, with any faith in the connexion between structure and function, leads to the guess that either connective tissue or endothelium has a good deal to do with it. From this he develops the conception that what we call antibodies are normal body constituents which have been altered by passing through the endothelium separating tissue fluid from blood, and that what the antigen does is not to stimulate some tissue to do something, but to alter the endothelium so that the fluids passing through are modified to some extent in a specific way. He regards "antibodies" as a living mechanism in the circulating plasma rather than as molecules of particular chemical configurations, and he rightly objects to the assumption that the test-tube phenomena of the serologist represent adequately the properties of live plasma. For a full presentation of his ideas the original memoir must be consulted. It should, however, be added that Dr. Eastwood is fully alive to the difficulties in the way of his interesting and suggestive hypotheses. On the particular point of endothelial filtrates he might, perhaps, have added more. While most of the antibodies (sensu serologico) of an immunised animal are in the blood, bleeding and the subsequent restoration of the blood volume by the taking up of tissue fluid from outside the vessels does not decrease their concentration for any length of time. Inconclusive as they are, these observations long since suggested that antibodies arose in some way during the passage of liquid from the tissue spaces into the blood.

A PROPHYLACTIC HUT.

This week-end Sir Henry Gauvain is opening the "Howard Marsh Hut" at St. Andrew's Home, Hayling Island, which has been presented to the Brompton Hospital by Mrs. Marsh in memory of her husband. St. Andrew's Home itself has been in existence for a number of years, and was selected by Dr. W. J. Fenton as an ideal place for the treatment of debilitated, anæmic, and under-developed children. The home stands just back from the beach, which is one of the safest in England, sloping almost imperceptibly to the sea, and leaving, except at actual high tide, a large expanse of firm sand covered for a considerable distance by only a few inches of water. Here the children can spend most of the day, returning to eat and sleep in shelters open entirely on one or more sides to the air. Clothing is reduced to a minimum, and what little is worn in winter is of the loosest and most hygienic pattern. In November, 1922, a hut of ten beds was erected, to which 37 of the most miserable and undersized children attending the Chelsea Tuberculosis Dispensary were sent during the past year. The results exceeded expectation. With an average stay of three and a half months the average gain in weight of these children was 8 lb. 3½ oz. (the greatest being 20 lb.) associated with a gain in height of 1 to 2½ inches. Naturally these results have not been reached without effort, and the success is rightly attributed in large part to the ceaseless coöperation of Dr. A. J. May and Miss Twining, medical officer and matron respectively of St. Andrew's Home, with officers of the Invalid Children's Aid Association, not forgetting the guard of the 10.15 train from Victoria. In its new and enlarged form the hut may prevent many of these so-called pre-tuberculous children from becoming the victims of tuberculous disease.

TREATMENT OF VARICOSE VEINS BY INTRAVENOUS INJECTION OF QUININE.

Although many ingenious operations have been devised for the relief or cure of varicose veins, few, if any, have circumvented the danger of thrombosis and embolism. There are, in fact, few large statistics of excisions of varicose veins in which thromboses and pulmonary embolism do not figure more or less conspicuously. In a review of this subject Dr. Henry Bardy,[1] of Helsingfors, gives an account of an incident which was singularly tragic. A young woman, looking the picture of vigorous health, consulted him for large but strictly limited and uncomplicated varicose veins. The case was one that seemed eminently suited for Babcock's operation, supplemented by excision of the great saphena vein. But when she was advised to undergo this operation she hesitated; her best friend had died of embolism as a sequel to it. She consented to it, however, when she was reassured by the statement that this danger could be avoided by strict rest in bed for a considerable time after the operation. The operation itself was perfectly successful, the wound healing without sepsis or other complications. She got up on the fifteenth day and fell dead on the floor. The necropsy showed embolism of the pulmonary artery following detachment of a thrombus from the stump of the great saphena vein. Having experienced another somewhat similar fatality among his 133 operations for varicose veins, Dr. Bardy has recently been exploring with his assistant, Dr. Ulfves, the possibilities of artificially provoking thrombi which would be firmer and more adherent to the walls of the veins in which they were first formed than the thrombi formed under ordinary conditions. They have found that the introduction of a solution of quinine into a vein not only hastens the rate of coagulation of the blood, but also effects changes in the walls of the vein favouring firm union between them and a blood-clot. Dissection of a vein, in which thrombosis had been artificially induced by an injection of quinine, showed that not only was the clot firmly attached to the vein, but that its wall was permeated by a blood-stained gelatinous substance. These investigations give support to the procedure advocated by Genevrier in 1922 in *Monde Médical*, No. 611. Genevrier's solution is: hydrochloride of quinine, 4; urethan, 2; distilled water, 30. The patient sits with legs hanging down, the field of operation having been disinfected with iodine. From 0·25 to 0·5 c.cm. of the solution is injected, an ordinary hypodermic syringe with a fine-pointed needle being used. It does not matter, and may, indeed, be advantageous, if a little of the solution fails to reach the lumen of the vein, and is deposited in its wall or in the immediate neighbourhood. The site of the puncture is closed with a little cotton-wool and collodium, and the injection is repeated about 8 cm. higher up the leg. Genevrier seldom injects more than a total of 4 c.cm. at one sitting. The resultant thrombosis is somewhat painful during the next few days, and it is advisable to defer the second series of injections for a week. Genevrier has given more than 4000 such injections without signs of embolism, and Dr. Bardy has given more than 500 injections to 26 patients without having to register a single accident. If further investigations should prove that the artificial quinine thrombus possesses sedentary and adhesive properties greatly in excess of those of the accidental thrombus, we may perhaps hope to see the operative treatment of varicose veins entering on a chapter less frequently punctuated by the tragedies of the fugitive thrombus.

VOCATIONAL CANCER.

We reported not long ago[1] a legal test case of vocational cancer in which the point at issue lay in whether "epitheliomatous ulceration" or "epithelioma of the scrotum" contracted in the course of a worker's employment as a mule-spinner was a disease for which compensation should be paid. The following two further cases of vocational cancer have since come before coroners' courts in the North of England, and out of one of them an important suggestion for the prevention of the disease has emerged. On April 21st at Middleton the county coroner, Mr. E. N. Molesworth, held an inquest into the cause of death of John William Fitton (53), who up to August last had been employed for about 18 years as a cotton spinner. Medical evidence by Dr. W. D. Findlay showed that in February last deceased suffered from an ulcer of the scrotum with secondary infection of the glands in the left groin. He was subsequently admitted into the Royal Infirmary, Manchester. Dr. Findlay expressed the view that the deceased's occupation was primarily responsible for his final illness—cancer of the scrotum. A verdict in accordance with the medical evidence was recorded. The Manchester city coroner, Mr. C. W. Surridge, on April 23rd concluded the inquest on John Allen (50), who died in the Crumpsall Institution on March 16th. The deceased had been employed for nearly 20 years in a chemical works at Weaste as a pitch-getter. Mr. Seal, H.M. Inspector of Factories, and Dr. S. A. Henry, medical inspector under the Factory Acts, attended the inquiry. In March deceased was certified to be suffering from cancer of the scrotum, which was attributed to the handling of pitch. As a pitch-getter Allen had to break up very hard pitch by driving in wedges with a heavy hammer, and also to place the larger pieces on lorries and shovel the smaller fragments. All this was done in the open air, and a certain amount of dust was produced by the breaking up of the pitch. The deceased had suffered from the epitheliomatous tumour for 18 months, and the inguinal glands were involved. The coroner returned a verdict that Allen had died from cancer due to his work in tar. Mr. Surridge, addressing the secretary of the company who employed Allen, said that they were not at present bound by law to have any medical examinations of their employees, adding he would like to ask if they were prepared, in view of this case, to take steps to have an examination. The secretary replied that they were, and that already a number of their men had been examined, and the company intimated that they were prepared to have regular periodical examination of their men in the hope of stopping such cases. The coroner said that this was a most praiseworthy attitude.

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[1] Finska Läkaresällskapets Handlingar, 1924, lxvi., 47.

[1] The Lancet, April 12th, 1924, p. 773.

TREATMENT OF POTT'S DISEASE.

THE large statistics which have recently been published should enable us to form a fairly balanced opinion of the comparative merits of conservative and operative methods of treatment in Pott's disease. These methods, it would seem, are to be regarded rather as complementary than as competitive, and a recent paper by Dr. Henning Waldenström,[1] of Stockholm, lays stress on the wisdom of preparing for operative treatment by a prolonged course of immobilisation in plaster. Since he began to employ Albee's method about ten years ago, he has followed a procedure which he calls "osteosynthesis after gradual correction." Of its value in other hands he is unable to speak, for the simple reason that no one has hitherto adopted it in a large series of cases observed over a considerable time. But of its value in his own hands there can be doubt, and up to the end of 1922 he had treated 80 cases in this manner. The fate of all was ascertained in the spring of 1923, and it was found that none of the seven deaths could be traced to the operation. The treatment being particularly difficult in childhood, the patients were classified according as they were under or over the age of 15. There were 66 patients under this age, and in 58 of these 66 cases recovery was effected with excellent functional and cosmetic results. Before these results were, however, attained, the careers of many of the patients were chequered. In as many as 14 cases the tibial graft fractured, and in the seven cases in which the operation was repeated on this account ideal results were ultimately obtained. Several of these fractures were due to severe injuries such as a fall from a great height or a spill on ski, and it is evident that the Albee patient who would live the life of an athlete may sometimes find himself actually and metaphorically skating on thin ice. When a child has exhibited signs of kyphosis for half a year, Dr. Waldenström refuses to operate until it has been recumbent in a Lorenz plaster bed for a year, and he abides by this rule even if the kyphosis is completely corrected before the expiry of this time. In spite of this precaution he has found that the surgeon may be surprised by the continued extension of the disease, and if the child is less than 3 or 4 years old it is better to wait at least two years after the onset of the disease. Dr. Waldenström is as careful in his post-operative as in his pre-operative treatment, and the fact that he can claim complete correction of the kyphosis and restoration of normal functional capacity in 80 per cent. of all his cases is doubtless largely due to his post-operative measures, which include immobilisation for two to three months in a plaster bed, then the wearing for another two or three months of a plaster corset, and finally the wearing of a steel corset for a year or two.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.

THE report for the year 1923 will be presented at the annual general meeting of the Society on May 7th. Since the last report 11 new members have been elected and 28 have been lost owing to death and resignation. The Society at the present time consists of one honorary, 152 life and 136 ordinary members, making a total of 289. The invested capital now stands at £147,650; in conformity with the by-laws only income may be used for the payment of grants and expenses. The income from investments during the year amounted to £4642, £313 10*s.* were received from subscriptions and donations; the working expenses were £350. During the year one widow died and one came on the funds; on Dec. 31st there were 51 widows and 6 orphans in receipt of grants. £4497 10*s.* were distributed in grants during the year. Two orphans during the past five years have received between them from the Brickwell Fund £575 to enable them to study for the medical profession; both qualified this year and are now holding house office in a London hospital. Membership of the Society is open to any registered medical practitioner who at the time of his election is resident within a 20-mile radius of Charing Cross. Relief is granted to the necessitous widows and orphans of deceased members of three years' standing and of life members. At the present time the widow of such member who has an income of not more than £125 a year receives a grant at an average rate of £50 per annum, paid half-yearly in advance, and each orphan, up to the age of 16, receives a grant of £40 per annum. An orphan, on attaining the age of 16, ceases to be eligible to receive grants from the ordinary funds. There are, however, two special funds from which grants can be made to orphans after the age of 16, and also special grants from £10 to £25 to widows. The annual subscription for a member who at the time of his election is under 40 years of age is 2 guineas, if over 40 but under 50, 3 guineas, and if over 50, 4 guineas.

TYPHOID FEVER SIMULATING ACUTE APPENDICITIS.

Dr. F. de Gironcoli,[1] of the Third Surgical Division of the Civil Hospital at Venice, who records an example in a girl aged 11, discusses the cases of typhoid fever with sudden onset which may simulate acute appendicitis. One of the first cases of the kind was published by Kirkebride in 1891, but Moizard, in 1899, is to be credited with having drawn special attention to the form of typhoid simulating appendicitis. After the appearance of Moizard's communication a series of cases of this kind were published in which the subsequent progress of the disease enabled one to exclude appendicitis. In other cases, as in that reported by Gironcoli, the persistence of severe local symptoms favoured the suspicion of appendicitis and was the cause of an operation being performed. In a large proportion of these cases the appendix was found to be normal, or the changes in it were not sufficient to account for the severity of the symptoms. In other cases, again, the appendix itself was found to be more or less normal, but changes were found in the neighbourhood which explained the pain and other symptoms, and enabled a diagnosis of typhoid fever to be made. Gironcoli's conclusions are as follows: (1) cases of typhoid fever may occur with a sudden onset simulating acute appendicitis; (2) the differential diagnosis between typhoid fever in the early stage and appendicitis is occasionally impossible; (3) when symptoms of acute appendicitis are present, even if typhoid fever is suspected, one should not wait longer than 48 hours before operating; (4) appendicectomy in the early stage of typhoid fever does not aggravate the course of the disease.

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[1] Acta Chir. Scand., 1924, lvi., 463.

[1] Riforma Medica, 1923, xxxix., 559.

MEDICO-LEGAL IMPORTANCE OF BLOOD-GROUPS.

AT the recent meeting of the Medico-Legal Society Dr. G. Roche Lynch told the story of blood-groups from their first discovery in 1900 with a view to determining their importance, if any, from the medico-legal standpoint The relative numbers of these groups in the ordinary population are now fairly well known as well as the broad differences found between Europeans and Asiatics. These were given by L. and H. Hirschfeld [1] in 1919 as follows:—

Cases.	Groups.			
	I.	II.	III.	IV.
Europeans—				
Average of 4000 ..	4·70 ..	41·23 ..	12·14 ..	41·93
Asiatics—				
Average of 2500 ..	6·74 ..	21·84 ..	32·74 ..	38·68

Of the various theories advanced in explanation of these facts Dr. Lynch finds that of Dungern and Hirschfeld alone at all convincing; they postulate two agglutinogens and two agglutinins. The application of the test lies in two directions, (1) blood-stains, (2) paternity cases. In the case of a man charged with murder, it might be claimed by the prosecution that blood-stains found on him were from the victim, and by the defence that they were from himself; the group of the stain would in many instances enable one or other of these suggestions to be negatived. Tables by Dyke and others give the blood-groups of the offspring that might be produced by any combination of parents:—

Parents.	Offspring may be—	Cannot be—
I. and I. I. ,, II. I. ,, III. I. ,, IV. II. ,, III.	I., II., III., or IV.	—
II. ,, II. II. ,, IV.	II. or IV.	I. or III.
III. ,, III. III. ,, IV.	III. or IV.	I. or II.
IV. ,, IV.	IV.	I., II., or III.

It would seem to be possible to demonstrate from the blood-groups that a given child could not have been produced by some particular parents—e.g., a Group II. child could not have sprung from two Group IV. parents.

Dr. F. C. Martley, who followed Dr. Lynch, gave an account of the technique employed to determine to what group any person's blood belongs and the modifications necessary to apply when investigating a blood-stain. He first demonstrated the method ordinarily used to test a particular blood: a drop of II. serum and a drop of III. serum are placed at either end of a slide and a little of the blood is taken up on a platinum needle and mixed with each; agglutination can be readily seen with the naked eye in a few minutes; when it occurs in both drops the blood is of I. group, when in neither it is IV. group, and when in only one it belongs to the group of the serum where there is no agglutination. To test the titre of a blood serum the further step is taken of putting up drops of whole serum, half serum, quarter serum, one-eighth serum, and so on, up to about 1/250 serum; an equal volume of a 1 per cent. dilution of appropriate corpuscles is added to each, and the agglutinations noted under the low power of a microscope—they may extend nearly to the end of the series, or may only go down three or four places, the range varying greatly in different cases. As regards blood-stains, valuable work has been done by Schütze. The problem can be approached in two ways: (1) An extract of the stain can be used to agglutinate known corpuscles, or (2) the agglutinating power of a known serum may be varied by treating it with unknown stain. The first is often difficult to demonstrate, but when a blood-stain on a garment is cut up into fine fragments, and incubated in a sealed glass tube with a minimum of distilled water, the fluid obtained therefrom, when filtered free of any particulate matter, generally agglutinates appropriate corpuscles when the preparation is kept overnight in a moist chamber. The second method depends on the agglutinating power of a serum being finite; for instance, when a IV. serum which agglutinates II. and III. corpuscles is treated with II. corpuscles, it can still agglutinate III. corpuscles as before, but its action on II. corpuscles is lessened as shown by the titre that gives agglutination, or abolished entirely. In practice the blood-stain is cut up as in the previous experiment, but put up with known IV. serum instead of distilled water; after incubation as before the serum is drawn off and filtered and its power tested against known corpuscles. In the case of a IV. blood-stain no impairment of agglutinating power should be found, but in the case of the other groups it can generally be detected; for instance, if the titre of the treated IV. serum was unchanged for III. corpuscles, but very markedly diminished for II. corpuscles, it would be shown that the stain in question was of a II. blood. Negative evidence alone, as Dr. Martley was careful to point out, may be fallacious owing to the blood-stain having become inert from age or otherwise or from having been too small. When definite positive evidence was obtained and confirmed, in no case had it led him astray.

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[1] THE LANCET, 1919, ii., 675.

THE EFFECTS OF ULTRA-VIOLET RAYS ON THE PARATHYROIDS AND CALCIUM METABOLISM.

THE biophysics of the ultra-violet rays is a territory in which many fields of research still lie fallow, and some useful spade-work has recently been done by two investigators, J. H. B. Grant and Frederick L. Gates, of the Rockefeller Institute,[1] which breaks fresh ground on the effects of the rays on certain endocrine glands. These workers exposed normal rabbits to the quartz-mercury arc lamp daily for periods of three to seven weeks and observed at autopsy the weight of certain endocrine glands in relation to the body-weight of the animal. Many controls were required because of individual and (in particular) seasonal variations in the gland body-weight ratio. Light-coloured or albino male rabbits, with ears shaved and backs clipped, were exposed to the unfiltered radiations of a quartz-mercury arc lamp for 30 minutes daily at a distance of 1 metre. The rays caused a marked erythema with some desquamation, followed by moderate pigmentation. At the expiration of the chosen period the animals were etherised and bled from the aorta. The weights of the several endocrine glands and the testes were recorded in milligrammes per kilogramme of body-weight. The changes in weight, per cent., compared with the normal controls are recorded. Leaving aside the somewhat fluctuating results in the other glands, the authors direct special attention to the considerable hypertrophy of the parathyroids. The percentage increase in weight from normal in these glands was at 3 weeks, 34·6; at 4 weeks, 51·1; at 5 weeks, 31·9; at 6 weeks, 27·7; and at 7 weeks, 14·1, the increase being most marked especially during the earlier periods of the experiment. The later decrease in weight the authors attribute to the protection afforded the rabbits by pigmentation. The increases in weight were due to a true hyperplasia of the parenchymatous tissue, as shown by microscopic examination. The examination of the calcium metabolism after exposure to the rays gave interesting results. The experiments showed changes in absorption and excretion of calcium and in the calcium level of the blood. It was found that the average blood calcium concentrations for the last three groups at autopsy—i.e., at 5, 6, and 7 weeks—were 12·7, 12·9, and 12·6 mg. per 100 c.cm. of serum as compared with an average of 11·9 mg. for 60 normal control rabbits. In another set of experiments rabbits were given increased exposures of ultra-violet light daily over a period of four weeks. These animals showed a relative increase of 32 per cent. in the parathyroid weight over the normal figures, and the blood calcium concentration rose from 11·9 mg. per 100 c.cm. of serum before exposure, to 12·2 mg. on the twelfth day, 13·5 mg. on the twenty-second day, and 12·9 mg. at autopsy. The normal relationship of the parathyroids to calcium metabolism is well established, but these experiments serve to relate the effect of ultra-violet light on calcium metabolism to the parathyroid glands. Whether the light acts primarily on the absorption and excretion of calcium and causes a rise of the blood calcium which results in a hypertrophy of the parathyroid gland, or primarily affects the glands themselves, remains to be determined.

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[1] Proc. Soc. for Expl. Biol. and Med., vol. xxi., No. 5, February, 1924.

VIRULENT SMALL-POX IN ONTARIO.

CONSIDERABLE interest attaches to the report of Dr. John W. S. McCullough, the chief officer of health of Ontario, on a recent epidemic of smallpox in the "border cities" of Ontario. A small epidemic of small-pox was present in Detroit in the early part of this year and, as was to be expected, a few cases developed in the neighbouring cities of Canada. These cases, however, were all of a mild character and occasioned no alarm, but about the middle of February an epidemic of malignant small-pox broke out in Windsor, Ont., following the death of a man suffering from an irregular type of the disease. This man, as the report states, was attended during his illness by several medical men of the highest reputation, none of whom believed that the patient was suffering from a communicable disease. During his illness the man was visited by many friends and relatives, and it was only when cases occurred subsequently in persons who had been in contact with him that the diagnosis of small-pox was definitely made. These cases were all of a particularly virulent and irregular type, and up to the early part of March the total number of cases which could be traced apparently to this source reached 42. Dr. McCullough states that it has not been possible so far to ascertain the source of infection of the original cases, but, whatever the source, the disease has been of a virulent form with a high mortality. In his report he brings out several points of importance in connexion with the epidemic. In the first place, the available evidence points to the first unrecognised case being one of sudden increase of virulence in the type of disease, and this Dr. McCullough believes was due to the fact that the person infected had never been vaccinated. Other points were the irregular character of the prodromal symptoms and of the rash. He divides the cases into three distinct types: (*a*) mild cases with history of an old successful vaccination over 12 years ago, also an occasional unvaccinated case who had been infected in Detroit; (*b*) severe semi-confluent and confluent cases which occurred solely in unvaccinated persons; and (*c*) hæmorrhagic cases which also occurred solely in unvaccinated persons and were all fatal. These latter cases, he states, were very difficult to diagnose even with the information that an epidemic of severe small-pox was present, and some of them showed a typical "lobster rash," as mentioned by Dr. Claude B. Ker in his book on infectious diseases. Dr. McCullough draws as his conclusion from the epidemic that the value of vaccination as a means of prevention has been proved, as it never was before, in an epidemic more severe than anything which Canada has seen since the Montreal epidemic of 1885. The deaths among unvaccinated persons suffering from the disease ran to 50 per cent. During the last week in February roughly two-thirds of the exposed population, or 50,000 people, were vaccinated. Dr. McCullough remarks with justifiable pride that there has probably never been a city in Canada which has been able to accomplish such a feat without the use of compulsory methods. The severity of the disease and the confidence of the people in their local health authorities made this possible. The value of the by-law providing for vaccination of children on entering school was shown in this epidemic by the absence of spread among the school population.

THE USE OF ARSPHENAMIN AFTER EXPOSURE TO SYPHILIS.

IN a review of the literature with a record of his own experience of the use of arsphenamin or salvarsan after exposure to syphilis, Dr. David L. Simon,[1] of Pittsburgh, abstains from employing the term "prophylaxis," as the question as to whether it is a prophylactic or curative measure is open to discussion. Pardoe-Castello, for example, with whom Dr. Simon is inclined to agree, maintains that it is a curative procedure in that it prevents the appearance of symptoms by curing the disease in the incubation period. The term "prophylaxis" is more applicable to modifications of Metchnikoff's method in which calomel or other spirochæticides are used directly after exposure to destroy the organisms in situ before they enter the blood stream. Local prophylaxis, however, is insufficient if used more than 12 hours after exposure, and it is in this group of cases that treatment by arsphenamin is most likely to be of value. Dr. Simon, who has employed his treatment for the last four years, confines it to persons who present themselves within 72 hours after exposure. The application of the method after this time is inadvisable, as there is a risk of giving insufficient treatment to a case in which intensive therapy is required. The cases treated had no previous history or evidence of syphilis, and all gave a negative Wassermann reaction. In most of the cases signs of active syphilis were present in the partner. The method consisted in the injection, every other day for three doses, of 0·3 g. neoarsphenamin dissolved in 10 c.cm. of distilled water. The Wassermann reaction was examined two weeks after the last dose and then at monthly intervals for four months. In the four cases which Dr. Simon records the Wassermann reaction remained negative, and no clinical evidence of syphilis was detected in persons so treated who had been kept under observation for periods ranging from four months to two years.

THE annual oration of the Medical Society of London will be given by Mr. Wilfred Trotter on Monday, May 5th, at 9 P.M., the subject being On Certain Minor Injuries of the Brain. The President, Dr. Herbert R. Spencer, will receive members and their guests at 8.30 P.M., and the oration will be followed by a conversazione.

THE fifth Maudsley Lecture of the Medico-Psychological Association of Great Britain and Ireland will be delivered at 3 P.M. on May 22nd at the Royal Society of Medicine, by Dr. John Carswell, Commissioner of the Scottish Board of Control. The title of the lecture will be "Some Sociological Considerations Bearing upon the Occurrence, Prevention, and Treatment of Mental Disorders."

THE exhibition of works of art by medical men, which is to be held in the Marcus Beck Room, at the Royal Society of Medicine, will be open from May 26th to June 14th. It is confined to works by Fellows and Members of the Society, and as the new movement is frankly an experiment, the space is very limited. The modest character was decided upon at the outset by those who, with the President of the Society, Sir William Hale-White, promoted the idea. Dr. Cuthbert Lockyer is acting as hon. secretary, and the selection and hanging will be supervised by Mr. Sydney Kendrick.

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[1] Urological and Cutaneous Review, April, 1924.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXIX.—THE TREATMENT OF ACUTE AND CHRONIC PAIN.

MORPHIA is immeasurably the best anodyne drug we possess; if there were no drawbacks in its use it would be unnecessary to discuss other anodynes. However, since its disadvantages are well known and dreaded, the use of opium preparations is usually postponed as long as possible, and consideration of the efficacy in relieving pain of less dangerous drugs becomes essential. In selecting an anodyne drug the following points arise:—

(*a*) *The Point at which the Drug Acts.*—Aconite, belladonna, and cocaine act peripherally; cocaine, hypodermically, may bring relief, but only when the injection is made at the point of lesion. Morphia acts only on certain pain centres in the brain, and is therefore wasted in the time-honoured lead and opium lotion and in laudanum fomentations; rectal morphia suppositories are efficacious only so far as the morphia is absorbed and carried to the brain. The synthetic or coal-tar preparations, aspirin, phenacetin, antipyrin, and the like also act centrally. Counter-irritation, whereby the perception of pain at one point is distracted by irritation of another spot on the same nerve exchange must not be neglected.

(*b*) *Habituation and the Limits of Susceptibility.*—Unlike morphia, the synthetic remedies need not be increased to maintain a constant effect on the body. On the other hand, while the dose of morphine may be increased till the most severe pain disappears, there is a level of pain beyond the effective action of any of the other drugs. Headaches and rheumatic pains frequently yield completely to the synthetic anodynes; cancer pains are not so easily subdued, while inflammatory and ulcer pains may hardly be affected at all.

(*c*) *Habit Formation.*—Some drugs, as opium, cocaine, alcohol, produce a craving for more, with active discomfort when they are discontinued, and a loss of moral stamina. Coal-tar derivatives have no such effect.

(*d*) *Influence on Other Systems.*—Even in small doses morphia affects the respiratory centre, sometimes beneficially, as where it depresses needless cough, sometimes harmfully, as when phlegm resting in the bronchi fails to excite the clearing reflex. The fear that morphia in kidney disease may lead to cumulative retention is unfounded, for this drug is mainly excreted by the bowel, and may indeed be a most useful means of allaying discomfort in the last conscious days of a dying uræmic patient. The heart is not adversely affected by morphia, and advanced heart disease is no contra-indication to its use. On the other hand, constipation is a troublesome symptom in nearly all those who take morphia for a long period. On the whole, we are apt to fear the secondary effects of morphia too much rather than too little, and to forget that large doses of the synthetic products may cause sweating, rashes, and sometimes cyanosis from methæmoglobin formation. It should be remembered that when we relieve pain we not only make the patient more happy, but also reserve his strength and increase his resisting power. Pneumonia is a disease which lends itself to anodyne treatment.

Soporifics and Anodynes.

The centres governing sleep and pain being separate in the brain, we shall fail if, when pain is the cause of sleeplessness, we attempt to induce sleep with ordinary hypnotics. Morphia acts on both centres, but its anodyne comes before its soporific action; in fact, with the relief of pain the patient may become bright rather than drowsy. The coal-tar anodyne drugs are not directly soporific, but any relief of pain is likely to allow sleep to a normally tired person. The soporifics as sulphonal, chloral, and veronal are useless for pain but form valuable adjuncts to the true anodyne drugs, since they induce sleep as soon as pain is subdued. Other drugs hold an intermediate place. Luminal, sometimes used as a hypnotic, may give enough analgesia to put to sleep a patient even though he has pain. Dr. R. B. Wild has observed that a patient suffering from cancer wakes from a morphine sleep free from pain, which will only come on later; one who sleeps as the result of luminal wakes with his pain at full force.

The *duration of relief* varies with different drugs. Opium for some reason has the advantage even over its active principle morphia, and its effects certainly long outlast those of the synthetic drugs.

Morphia in Acute and Chronic Cases.

Though morphia is the best pain-killer we possess, owing to the fear of "habit" it is inapplicable in minor maladies and is inadvisable in major non-fatal illnesses likely to be protracted. It is justified when the illness is acute and painful, but likely to be short, or where a prolonged illness is leading to a certainly fatal termination.

In *acute cases* treatment by morphia for severe abdominal pain needs a rare discrimination, for it may mask diagnostic symptoms on the one hand, and on the other it may help by preventing spread of infection; while if it turns out there is no surgical lesion, unnecessary pain where morphia has been withheld is regrettable. In pneumonia another problem arises. Does the opium which eases the pain and allows sleep dull the respiratory centre sufficiently to cause risk? I think it does not, and I believe it to be one of the most efficient remedies in the first week of pneumonia, leaving the patient more fit to fight through when the crisis is at hand.

In *prolonged fatal cases*, as inoperable cancer, the question is rather one of the limit of size of dose to which the patient can attain. From the medicinal point of view there is no limit, though there are mechanical and financial disadvantages in continuous increase of dose. It is wise to withhold the drug within sufficient limits to keep an easily manipulated remedy in hand.

The Sequence of Drugs in Prolonged Fatal Cases.

The plan I aim at is to start with some coal-tar products, gradually reinforcing these by some morphine preparation. The duration of relief afforded by the synthetic drugs alone is very short and is prolonged by morphia in increasing doses. The synthetic drugs cannot be increased to any great extent since toxic symptoms arise, nor can they replace each other. It is well to keep the patient on coal-tar derivatives longer than is usually done. Of these, aspirin has become almost too well known to the lay public. Its high anodyne property combined with its low toxicity places it among the first of its class. But even aspirin may cause toxic symptoms, especially given with alkalies, as when it is washed down with soda water. Phenacetin, though weaker, acts wonderfully well in some cases. Antipyrin has the advantage of being soluble in water and can be given in mixture. A disadvantage of all these drugs when more than 15 g. is given is that profuse sweating may be caused and sometimes collapse. Blueness must be looked for if they are pressed. Fortunately this destruction of hæmoglobin is rarely serious, and even when blueness appears one may continue the drugs if caution is used. Powders of these preparations may be combined with powdered opium or Dover's powder, or pills and tablets of the two drugs taken together. Another useful combination is that of opium with a soporific drug, which, though useless alone, materially diminishes the amount of opium necessary to produce sleep—for example, a mixture containing t. opii, ℳ xv., pot. brom., gr. xv., and chloral hyd., gr. xv.

Counter-irritation in one form or another may be useful Painting with iodine over the chest, blisters over the head or body may be useful for a time. Spirit of cajuput in full doses may give great relief in a stomach cancer.

Alcohol has a definite anodyne action in doses not great enough to cause drowsiness or excitement, and may be continued far into the illness. Patients generally favour whisky and champagne; the possibility of the alcohol habit must not be forgotten in non-fatal cases.

Opium versus Morphia.

There are differences, largely manipulative and mechanical but also therapeutic, between opium and morphia. Morphia is more expensive. That it lends itself to hypodermic injection is a two-edged weapon; the patient is less likely to take to this method of medication himself, but if he does acquire the habit it is more likely to become confirmed. Morphia, hypodermically, acts quickly, and when one is attempting to keep the dose down, rapidity of action is important, for the patient is less likely to clamour for his drug in anticipation if he knows he can get easy relief when he really needs it. But it is not in every household that one can leave a hypodermic syringe to be used by a layman. When both are given by the alimentary canal, opium acts more slowly than morphia, but for a longer time. It is interesting to note that tincture of opium, the repeated dose of which in the British Pharmacopœia is ♏ v. to xv., is of the same strength of morphia (1 per cent.) as the morphine solutions of which the dose is ♏ x. to lx. On the whole, opium has the wider range, and it is wise to keep morphia in reserve unless circumstances specially favour its use. Of the solid preparations of opium, Dover's powder is especially useful in febrile conditions as the ipecacuanha reinforces the slight sudorific action of the opium, but sometimes the emetine causes nausea. Soap pill, which is used mainly for its analgesic action, has, like the compound ipecacuanha preparations, the advantage of suppression of the word opium. Omnopon, dose $\frac{1}{6}$–$\frac{1}{3}$ gr., is said to contain all the active constituents of opium without its resins and inert bodies; it is quite effective and useful in its tablet form, and may not upset the stomach as much as does opium. Of the fluid preparations, nepenthe and Battley's liquor sedativus are more pleasant than the official tincture, and given in slightly larger doses are as effective. The pharmacopœial liquid extract of opium, for which the opium is extracted with water, has the advantage over the tincture of not containing the resinous bodies which disagree with the stomach; it is an official preparation which deserves much more use than it gets. Opium in some form is irreplaceable in certain cases of pain, especially for malignant disease. Most medical men will agree with Dr. Robert Hutchison's recent words, "When our time comes . . . . I hope it may be your fate and mine to find ourselves in the hands of a doctor who is not afraid to use morphine."

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Special Articles.

BRITISH EMPIRE EXHIBITION, WEMBLEY:

HEALTH IN THE TROPICS.

I.

"THIS Exhibition . . . stands for the coördination of our scientific knowledge and a common effort to overcome disease . . . in many parts of the Empire." With these words the King referred to the share that medical men and women have in the problems of Empire when he opened the British Empire Exhibition on April 23rd, 1924.

The quotation "Good wine needs no bush" is misleading when used as a proverb; where the wine is applauded publicly as good it may not need the advertisement of the Bacchic bough, but as long as its virtues are ill-recognised, every opportunity for displaying them should be taken. And as was pointed out in these columns recently, the cause of disease prevention within the far-flung bounds of our Empire still needs much effort for the enlistment of public sympathy. Unless the public understand and coöperate, the medical profession cannot succeed in the task of making it possible for native and white man alike to live and move and have their being in each and all of our dominions unmolested by the terrible scourges of endemic and epidemic disease. Vast areas of our Empire, rich in promise, are as yet little, if at all, opened up for the service and well-being of mankind owing to the heavy toll which disease takes of those who would labour there.

Apart from the actual cure or prevention of disease, we have in many of our dominions the question of the means whereby it may be possible to bring medical aid within the reach of those thousands of men and women who are to all intents and purposes isolated amid vast tracts of unpopulated country. Here the health and well-being of countless British subjects depend as much on the engineer as on the medical man, and yet unless the medical man first make the country free from disease how shall it be possible for the engineer to construct railways? Or how shall the advent of the trader and settler, in sufficient numbers, render possible the provision of hospitals and all that is necessary for the establishment of self-supporting medical services? Government and charitable aid may do much, or even all, that is necessary for the clearing of a given tract of country from some specific disease, but it is the advent of a self-supporting population in the wake of the scientist which renders possible a general medical and surgical service, such as is indispensable for the well-being of a community. The provision of an adequate health service rests principally with those bodies, governments, local authorities, and commercial undertakings on whom rests the responsibility of voting the necessary money. This money may be voted either because there exists a brotherly desire to help others, or because the body concerned considers, with Celsus, that "health is wealth"—the two motives are generally concurrent. The medical services overseas would not have been starved for so long if people had, ere now, realised to the full the enormous increase of wealth that is possible if only the immediate sphere of their operations could be made healthy. The overseas officials and others would have their lives made much more enjoyable if in the countries where their work lay their wives and families could live wholesomely; then the establishment of a permanent community would be fully beneficial to the locality and the Empire.

The British Empire Exhibition will have served a great purpose if it brings home to the public the immense importance and need of proper medical and sanitary services, even if looked at merely from the motive of greater return for the effort and wealth that are expended in the various parts of our dominions. A brief survey of the exhibits in the Tropical Health Section of the exhibition appeared in these columns recently, and these are so much to the point and their arrangement so good that the only thing that need be said further in this connexion is that the lay public, and especially those with interests abroad, should be exhorted to go and see for themselves some at least of the factors which enable us to present health reports from the colonies as satisfactory as those which we publish regularly in THE LANCET. These reports make no pretence of being complete, but they are sufficiently representative to enable the reader to form the bright hopes of victory in the various great fights against disease.

In the Tropical Health Section of the British Empire Exhibition there are exhibits in connexion with 27 tropical diseases carefully grouped according to their ætiology, and all can realise what great progress the past 20 years has witnessed. For example, a campaign with its centre at the Medical School of Khartoum has practically cleansed the Sudan of bilharzia. Among the school-children of Dongola the incidence-rate has been reduced from 20 to 6 per cent., over 10,000 children being treated with intravenous injections of tartar emetic without a single mishap. Malta fever has been traced to its source, and, widely spread as it is, has been practically stamped out among the white population. Sir Leonard Rogers has attacked Asiatic cholera and considerably reduced the mortality; the reduction of the incidence-rate, however, is a matter which still requires vigorous hygienic and sanitary measures. Typhoid fever, which in the South African war caused a death-rate of 3·6 per cent. of our troops, took toll of but 0·006 per cent. of the British troops in France in 1917, and in this, as in many other diseases due to the typhoid-coli group of bacteria, proper hygiene and sanitation have reduced the rate of incidence to very small proportions. Ankylostomiasis, which caused such a high morbidity rate among miners and others, especially the workers in the St. Gothard tunnel, is now preventable. Scurvy and beri-beri, the latter of great economic importance to large employers of native labour, can now be overcome if the diet can be controlled. Sprue still gravely impairs the efficiency of Europeans in the East, and its ætiology still remains obscure, but research workers are hopeful of final success, the results of parathyroid treatment being encouraging. Rigorous segregation of the leper is having its effect in reducing the incidence of the disease, and the treatment of yaws by arsenical preparations brings the medical man into the realms of the miracle worker with countless natives.

Yellow fever and malaria, two diseases which in the past have taken such terrible toll of life and which seemed to be a barrier to so much enterprise, have, by the self-sacrificing labour of many workers, been traced to their source, and by means of simple measures carried out with great thoroughness large tracts of country are now practically safe. In Malay alone in 19 years 32,200 lives have been saved by the reduction of the death-rate following adequate drainage, and in the same area in seven years the spleen-rate dropped from 15 to 4 per cent.

Filariasis, dengue fever, and trypanosomiasis are yielding before determined onslaughts on the mosquito and the tsetse-fly; in regard to the latter in the northern zone of Principe the case-rate was reduced in five years from 45·8 to 1·0 per cent., and in Buganda in 1914 there were no deaths, as against 400 nine years previously. Last, but not least, by strict hygiene and the destruction of infected dwellings, combined with the intravenous injection of antimony, the death-rate from kala-azar has been reduced in several areas by over 50 per cent.

These are but a few illustrations of the way in which medical science has in the past few years rendered comparatively healthy and habitable a tropical life which commenced formerly for many with the first step towards an early grave.

We publish this week the most recent notes available on the public health of Jamaica and the Falkland Islands, and in each case the story by comparison with previous official documents is one of progress.

WEST DENBIGHSHIRE HOSPITAL.—This hospital, which is in course of construction at Colwyn Bay, will soon be completed and will have 47 beds for surgical and medical cases, together with private and maternity and children's wards. The Red Cross Society gave £10,000 provided another £10,000 were raised locally, and this has been done. In addition subscriptions amounting to £4000 were obtained and these sums will probably suffice for the actual building. A further sum of £1500 has been subscribed towards the equipment.

SIGHT AND SCHOLARSHIP.

REPORT BY THE COUNCIL OF BRITISH OPHTHALMOLOGISTS.

A MEMORANDUM has been issued by the Council of British Ophthalmologists dealing with the standards of vision desirable for candidates for scholarships and teacherships under local education authorities. In the interests of the community and of the individual, the memorandum runs, it is important that scholarships and teacherships should not be granted to candidates suffering from such ocular defects as may be aggravated by long-continued study and lead to inefficiency or incapacity later in life. It is, therefore, advisable to establish, if practicable, standards of vision which shall exclude unsuitable candidates. At the same time standards should not be fixed so high as to exclude any appreciable number who might in practice prove fit. The average age of entry upon a junior county scholarship is 11 years; the holder is transferred to a secondary school for five years. Supplementary scholarships are awarded at about 13 years of age, and are held for three or four years at a secondary school. Intermediate scholarships are granted at about 16 for two or three years. Senior county scholarships are granted at the age of 18 years, and are tenable at a university for three or four years. Prospective teachers undergo training at a college between the ages of 17 and 20 years.

Errors of Refraction and Their Effect.

Myopia.—The errors of refraction of most importance in reference to education are myopia and high degrees of astigmatism. Myopia is found in about 10 per cent. of children at the leaving age in elementary schools, and in about 10 per cent. of these myopes it becomes a serious defect; in the remaining 90 per cent. of the myopes the defect causes little inconvenience apart from the necessity for wearing glasses. It is generally agreed that in many persons prolonged near work on fine objects under comparatively poor lighting is a cause of myopia, or aggravates existing myopia, especially when astigmatism is present. If preventive measures are to be initiated, and the selection of individuals likely to become unsuitable for such special duties as teaching is to be avoided, it is necessary to determine at as early an age as possible the unfavourable cases. In elementary schools cases of myopia of considerable degrees are found in infants under 7 years of age, but the first routine test of vision is not made until the children are about 8 years old. Of the cases examined at this age and sent to clinics, some with diminished visual acuity and considerable myopia are transferred to myope classes; others are ordered glasses and return to school, but usually not sufficient effort is made, either at the clinics or at the schools, to warn parents regarding the future of these children. At the age of 11 the child either is left to continue his education in the elementary school until 14 years old, or goes, frequently by means of a scholarship, to a school giving higher education of a more intensive kind. Successful scholarship candidates are then medically examined, and the first administrative difficulty arises in the elimination of those to be deemed medically unfit.

A child of 11 with 4·5 dioptres of myopia would by most authorities be deemed unfit for a scholarship. He must continue at the ordinary school or, exceptionally, go to a myope class. A child of this age with 1·5 dioptres of myopia would be deemed fit for a scholarship. Between these limits of 4·5 and 1·5 dioptres of myopia a decision has to be given on many difficult cases. Many young myopes have good visual acuity with correcting glasses, and apparently healthy fundi, yet their defect is often progressive. The determination in all young myopes of the rate of progression is most important. The previous history, however, is often defective. It may be known that the child has worn concave glasses for some time, or, at best, there may be a record that vision was tested at the age of 8 and found normal. More accurate records would be of great value, and it is desirable that such should be kept.

Astigmatism of considerable amount may cause want of efficiency, especially in those engaged in an occupation such as teaching, which involves much close or fine work. With very high degrees of this defect, visual acuity, even with correcting glasses, is usually subnormal.

Recommendations of the Ophthalmic Committee.

The experience of the ophthalmologists is embodied in the following recommendations:—

Visual Acuity.—In all candidates for scholarships and teacherships the visual acuity, with correcting glasses, should be not less than 6/9 in the better eye.

Myopia.—A child of 11 with less than two dioptres of myopia in either eye should be passed. A child of 11 with more than two and less than three, on probation, should be re-examined every six months. A child of 11 with three or more dioptres of myopia in the better eye should be rejected for scholarship training. At the age of 15 those with more than four dioptres of myopia in the better eye should be deemed unfit to train for the teaching profession. Entrants to training colleges, who are, as a rule, about 18 years of age, with more than five dioptres of myopia in the better eye should be rejected.

Astigmatism.—Simple myopic astigmatism exceeding three dioptres in the better eye should be a cause of rejection of candidates both for scholarships and for training as teachers. In cases of compound myopic astigmatisms, unless the myopia is stationary, astigmatism of even two dioptres may be a cause of rejection. Cases of hypermetropic astigmatism should be rejected only if visual acuity, with correcting glasses in the better eye, is less than 6/9.

Hypermetropia.—This defect should not be a cause of rejection unless vision, with correcting glasses in the better eye, is less than 6/9.

Special Cases.—If there is only one eye, or if there is only one useful eye, the other being amblyopic from non-progressive disease, which in no way affects, or is likely to affect, the good eye, the case should be judged on the condition of the good eye. In the case of candidates for university and technical senior scholarships, or those intending to specialise as teachers of certain technical subjects, greater latitude may be allowed after consideration of special circumstances as to nature of work, the condition of the candidate's eyes in other respects, &c.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Co. Galway Health Scheme.

A SCHEME brought forward by the Co. Galway Board of Health for the reorganisation of the health services of the county has roused great opposition among the members of the medical profession in the county. It is proposed to reduce the number of dispensary districts from 44 to 28 by a process of amalgamation and rearrangement, and to reduce the number of medical officers by 11. At a representative meeting of the Co. Galway medical practitioners held last week in the Railway Hotel, Galway, at which Dr. T. B. Costello, Tuam, presided, a resolution was adopted declaring the scheme absolutely unworkable from the medical point of view for the following reasons: (1) the dispensary areas in the Co. Galway are at present too large, and as comparable with other districts in Ireland they are almost double in rural population; (2) the amalgamation will increase the number of "red ticket" cases, lessen the attention that people in rural districts can get, increase the necessity for hospital accommodation, and place the people in grave danger in times of epidemics. Resolutions were also passed to the effect that an economical provision of seven cottage hospitals or clearing stations is necessary in certain areas to deal with emergency work, and to protest against further schemes of amalgamation for any county until the matter is dealt with on a national basis by well-considered legislation. A committee was appointed to watch over the interests of the medical practitioners of the county.

The Unworkable Size of Some Dispensary Districts.

Dr. T. Hennessy, medical secretary of the Irish Medical Committee, said it was always considered in Leinster and parts of Munster that any district with an area of more than 25,000 statute acres and a population of between 2000 and 3000 could not be efficiently worked. In all the schemes that were ever considered in Dublin, the one thing that everybody agreed upon was that in Connacht most of the districts were vastly too big. They had districts of 40,000 and 60,000 statute acres, with populations running up to 6000. No man was supposed to do more than 2000 people in an urban area, where they were all close together. When they had a bigger population scattered over 60,000 acres they could only do rush work. They would in these circumstances see their patients once, but not a second or third time. As a matter of fact, one dispensary district in Co. Galway—namely, Oughterard, has an area of 70,085 acres, which is supposed to be adequately attended by one medical officer. Rounelstone, with 104,753 acres, has two medical officers; Spiddle, with 63,435 acres, Athenry, with 56,440 acres and a population of 5916, Bullaun, with 55,862 acres, and Lettermore, with 44,555 acres and a population of 8030, have one each. It is manifestly impossible that the people scattered over these enormous areas, much of which, in the western part of the county at any rate, is bog and mountain without roads, should receive adequate attention under present conditions. To render the facilities for medical attention even more imperfect than at present is a retrograde step.

The Asylum Strike in Co. Donegal.

The Committee of the Tirconaill Mental Hospital having been able to obtain a staff of attendants to take the place of those who recently went on strike, has taken the step of dismissing all those who ceased work. At the same time the committee reserves power to deal as is thought best with all applications for re-employment. It is said that this dismissal abrogates any pension rights the late attendants may have had.

Irish Medical Association.

The Council of the Irish Medical Association has nominated for re-election as President and Vice-President of the Association respectively, the present officers, Senator W. O'Sullivan, of Killarney, and Prof. F. C. Purser, of Dublin.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Annual Congress of the Ophthalmological Society of the United Kingdom.

THE Annual Congress of the Ophthalmological Society of the United Kingdom is being held this week in Glasgow under the presidency of Dr. A. Maitland Ramsay. The choice of Glasgow for the Congress coincides appropriately with the centenary of the Glasgow Eye Infirmary, to which some reference has already been made in THE LANCET. The proceedings extend over three days, May 1st to 3rd, and the discussions take place in the Department of Zoology of the University, which also houses the scientific exhibition in connexion with the Congress. By the time my letter appears in print the Congress will be in full swing. The programme is an extensive one, and should be productive of much interesting material. After the members have been welcomed by Sir Donald MacAlister, the morning of the 1st is devoted to a discussion of the physiology and pathology of the pupil reactions, to which Dr. Edwin Bramwell contributes. A series of short papers on various subjects occupy the Society in the afternoon, and in the evening the members dine together. On the morning of May 2nd a clinical meeting is being held in the Eye Infirmary. After the business meeting in the afternoon, a reception is to be given at the University by the Principal and Lady MacAlister. The evening session is devoted to a number of short papers and demonstrations. On the morning of May 3rd a third series of short papers will occupy the attention of the Congress. An interesting museum has been collected for the Congress. In addition to purely clinical exhibits, Prof. T. H. Bryce has provided specimens showing the development and anatomy of the eye, and Prof. Graham Kerr a series of microscopic specimens illustrative of the comparative anatomy of the eye.

Edinburgh Post-graduate Class in Insulin Therapy.

It was recently arranged to hold a post-graduate class in the Royal Infirmary during the first complete week of each month for the study of insulin therapy, particularly in relation to the use of insulin by the general practitioner. A beginning was made in March in the wards under the care of Prof. Meakins. The class, which was limited in numbers to ten, was fully attended and met each morning for a period of two hours. The more theoretical aspects of the disease were discussed and at the same time the opportunity was given for studying the severe cases under treatment in the wards. One afternoon was spent with Dr. Murray Lyon at the Diabetic Out-patient Clinic, where many of the milder cases are treated as out-patients and former ward cases kept under observation. These patients were of special interest to practitioners, for here it was conclusively demonstrated how effective treatment can be when intelligent coöperation between patient and physician exists. These diabetics are supplied with such diet tables as they require, and are instructed how to test their urine and administer their own insulin with the most satisfactory results. Emphasis was laid on the fact that diabetes can be thoroughly treated without resort to blood-sugar estimations, and these cases demonstrated that a more practical and even more effective control can be maintained by frequent examinations of the urine. Attention was directed also to the careful construction of diet tables. Much has been accomplished in the clinic by the use of standard diet tables, suited to the varying types of diabetics met with, and this in itself has done much to simplify treatment by the busy practitioner. Two afternoons were spent in the biochemical laboratory of the Royal Infirmary, where demonstrations were given of a simplified method of estimating the blood-sugar which could be readily carried out by the practitioner should he so desire. Instruction was also given in a new and more accurate method for the estimation of sugar in the urine. The class should prove of the utmost value to practitioners in the handling of diabetic cases in general practice.

Necessitous School-children.

There are two official bodies on whom the care of necessitous school-children is a charge—the education authorities and the Poor-law authorities—and while their objects to some extent overlap, the administration of these two bodies is entirely separate. On the part of the education authorities there has been recently some doubt as to the scope of the rights and duties of each, and to make the present position clear the Scottish Education Department issued on April 14th a revised circular (No. 67) on the feeding and clothing of necessitous school-children, and the Scottish Board of Health have thought it desirable to publish simultaneously a short summary (circular No. IV., 1924) on the present legal and administrative position from the point of view of the Poor-law authorities. The crux of the problem lies in this, that while it is the statutory duty of the education authorities to provide efficient education, a hungry stomach and a receptive brain are physiologically incompatible, and therefore the education authority must undertake to provide equipment and service for the preparation and supply of meals to pupils. In certain specified cases only is the cost of the meals defrayed out of the education fund. The primary concern of the Poor-law authorities on the other hand, is the relief of destitution, and thus where the persons to be relieved are persons of school age, both sets of authorities have obviously a common status. These circulars contain helpful advice as to the most efficient method of obtaining coöperation towards the common goal—namely, the health and development of the children. It is suggested that where relief is applied by the Poor-law authority the education authority might supply the accommodation service and cooking apparatus, and in point of fact in certain areas, as, for example, in Glasgow, an arrangement of this sort has been in operation for some time with excellent results. The principles of coöperation which are outlined in the circulars should be helpful to the efficient administration of the statutes.

BUCHAREST.

(From our own Correspondent.)

Improvement of the Workmen's Insurance System.

A Congress of Rumanian physicians was held lately in Czernowitz, the capital of Bukovina, a part of the former Austro-Hungarian empire. The chief topic of discussion was the improvement of the workmen's insurance system, which in its present form leaves much to be desired. The Government was represented by the Minister of Public Welfare and Health, Mr. Marzescu, who opened the Congress with the statement that the Government has been and always will be ready to make monetary sacrifices in the interests of public health and welfare. The Congress discussed the ways and means of improving the system of workmen's compensation in Bessarabia and the old kingdom of Rumania, where at present insurance is at a very primitive stage, as the Minister admitted. He stated that, on his proposal, a law had been drafted providing that all persons seeking relief at mineral springs, inside or outside the country, should, regardless of their financial status, obtain a reduction of 75 per cent. in the railroad fare within Rumania. The necessity for taking the baths or staying at a climatic resort has to be certified by an official physician, in towns by the medical officer, in villages by the district physician. Members of the workmen's insurance companies pay no fare when going to the baths for their health.

Difficulties of Country Practice in Bessarabia.

Dr. Stefanescu, chief medical officer of the Province of Bessarabia, spoke about the great shortage in the number of country doctors. He said that in more than 100 districts the position of district physician is vacant. In Bukovina, out of 40 districts these positions are filled in 18 only. This is largely due to the small salary paid by the State. Energetic efforts will be made by the health officer of Bukovina and Bessarabia to secure salaries large enough to maintain a physician and his family. At present the cities are crowded with doctors, many of them living a life of poverty rather than become district physicians. The risks to public safety in these territories are also largely responsible for the shortage of rural doctors. Mr. Marzescu stated that on his return to Bucharest his first task would be the solution of this important problem. Several weeks ago a new disease developed in Bessarabia, which resembles malaria, but is caused by a hitherto unknown fly, and not by mosquitoes. The bite of this fly causes a febrile disease that lasts from four to six days and is accompanied by nasal bleeding and a petechial eruption on the lower extremities, chest, and abdomen. Because of the lack of physicians there have been about 16 fatalities, all of which could have been prevented. In districts where physicians have been available not one patient succumbed. This lesson cannot fail to impress the Government and will result in raising salaries sufficiently to attract younger physicians to settle in the country. Luckily the epidemic is over, and it is hoped that next year there will be no recurrence.

The Rise of Infantile Mortality in Transylvania.

The deplorable condition of public sanitation in Transylvania, the largest province of Rumania, is evidenced by the request of Dr. Nicolau Popovici, chief medical officer of the county of Bihar (at present also the political prefect of the county), for help from the Government. He states that unless active and energetic measures are taken the mortality in the villages, already most serious among the children, will rise to an alarming extent. The number of births is decreasing. In July 49·87 per cent. and in August 57·21 per cent. of the new-born children died. This high mortality-rate is partly due to epidemic diseases and partly to the great number of drink-shops, which is still increasing. In Vaskoh, a village with 888 inhabitants, there are 17 brandy shops. Brandy is cheap, a litre (two pints) selling for 35 or 40 lei, approximately 10–12 pence. Besides this almost every farmer brews his own plum brandy. In consequence alcoholism is rampant and the majority of babies are weakly and suffer from rickets. Dr. Popovici recommended that the administrative committee of the county should send a memorandum to the Government to urge the refusal of licences for the sale of brandy.

Tuberculosis Exhibition in Bucharest.

A tuberculosis exhibition will be held in Bucharest in the course of the year. The National Association for the Study and Prevention of Tuberculosis and the Committee on the Prevention of Tuberculosis of the Charity Organisation Society have decided that, in view of the widespread interest in the subject of consumption, as shown by the working of the anti-tuberculosis associations formed in all provinces of the country, and the increasing desire to provide better conditions for consumptives in many cities, it is time to gather together an exhibition which will show just what has been accomplished in this country in fighting the great white plague. The exhibition will be so arranged that it will present, through diagrams, photographs, and models, a picture of the progress being made in the fight against tuberculosis, and at the same time will show the need for further effort.

Gastric Disorders and Diabetes.

Prof. Dr. I. Constantinescu, of Bucharest, said at a recent meeting of the Medical Society that in not a few cases of diabetes gastric symptoms were common, and these were usually considered to be the consequences rather than the cause of the diabetic condition. In a case treated several years ago, however, for atony of the stomach, after the employment of lavage the patient improved so much that Dr. Constantinescu resolved to investigate the relationship of stomach disorders and diabetes. Since then he has treated the stomach in 13 cases of diabetes. Seven of these have been under observation for more than two years. In all a definite catarrhal process was found. All of them were helped by lavage. The sugar content of the urine was reduced and the patient's general health always improved. In almost all of the cases there was an immediate reduction of the thirst and of the polyuria. In all of them, too, a good but not voracious appetite was noticeable. Symptoms of restlessness and bad temper disappeared promptly.

THE BRITISH EMPIRE CANCER CAMPAIGN.—A meeting in support of the British Empire Cancer Campaign will be held under the presidency of the Lord Mayor of London at the Mansion House on Tuesday, May 6th, at 3 P.M. Among the speakers will be the Duke of York, the Rt. Hon. J. H. Thomas, Secretary of State for the Colonies, the Rt. Hon. John Wheatley, Minister of Health, Sir John Bland-Sutton, P.R.C.S., and Prof. W. S. Lazarus-Barlow.

Correspondence.

"Audi alteram partem."

SYMPTOMATIC SCIATICA AND SACRO-ILIAC DISEASE.

To the Editor of THE LANCET.

SIR,—In an annotation on this subject in your issue of April 19th (p. 815) one point seems to me to require amplification. It is there stated: "Of late years much attention has been given in the United States to the diagnosis and treatment of sacro-iliac disease; many more cases have been reported in that country than in Great Britain, where definite arthritis of the joint *from whatever cause arising* is comparatively rare." The italics are mine, and I emphasise these words, for in my experience traumatic arthritis of both lumbo-sacral and sacro-iliac joints—more particularly the latter—is not comparatively rare in this country. It is, indeed, extremely common; though, unfortunately for the victims, it is rarely diagnosed. Traumatic arthritis of these joints is a clinical entity, easily recognisable, and, except in the more severe forms, easily alleviated and often cured.

Lumbo-sacral strain is usually a more or less chronic condition, and is due to an accentuation of the normal lumbar curve (marked lordosis), or to an obliteration, even it may be to a reversal of this curve leading to the "flat-back" and vertical sacrum. The former condition, so far as I know, is nearly always postural and is rarely "acute," except in lawn-tennis players with a vigorous over-head service. The latter is usually postural, though acute onset sometimes follows prolonged anæsthesia when the lumbar spine has not been adequately supported. Either condition may provoke very severe backache; and, particularly the latter, may be a cause of intense pain "referred" down the legs. A glance at the patient's back, sitting first, then standing, will reveal the possible cause of the trouble. Whether this is the true cause or not can readily be proved in the "lordosed" case by examining the patient prone and accentuating the curve first by raising the extended legs backwards and then by raising the trunk. In the "flat-back" variety the examination is made recumbent, the legs and the trunk being raised as before. Increase in pain is diagnostic in the absence of a sacralised lumbar vertebra, enlarged transverse processes of the fifth lumbar vertebra (so that they form a false joint with the crest of the ilium), fracture of a transverse process, or arthritis due to disease (tuberculosis or osteo-arthritis)—all of which can be excluded by X ray examination. Relief from symptoms can be secured by adequate back support.

The other possible cause of pain as the result of the examination is sacro-iliac strain. This may be acute or develop slowly. Great force is not essential to precipitate an acute attack; a slip while stepping out of a bath or even pulling out the bottom drawer of a chest of drawers is adequate. Moving or throwing a heavy weight, e.g., receiving a heavy sack of coal on the back, or any fall, e.g., a slip on the stairs, will often produce a severe attack. Diagnosis is simple. The patient stands with the trunk inclined forwards, the hip and knee of the affected side flexed, the toes only resting on the ground. He usually places one hand in the small of the back for support, and there is tenderness near the "dimple" in the region of the sacro-iliac joint. The lumbar spine is held rigid with a concavity to the injured side. Sitting, the position is similar, but the weight is supported chiefly on the tuber ischii of the unaffected side. Recumbent, abdominal palpation will often reveal the presence of "Baer's sacro-iliac point." This is a point of great tenderness two inches down from the umbilicus on a line drawn from this point to the anterior superior spine.

How many patients, one wonders, have been subjected to operation for appendicitis or have been treated for "ovarian pain" on account of tenderness over this point without securing relief. If, when this "point" is discovered, the tenderness is relieved by pressure backwards on the anterior superior spine, or forwards on the posterior superior spine of the ilium, diagnosis is certain. This sign is not invariably present and then examination has to be prolonged. The leg on the unaffected side is raised with the knee fully extended (as in testing for sciatica), until the limit of painful movement is reached. The range of movement is then compared with the injured side. When the limit of painless movement is reached the foot is dorsiflexed. If this increases pain we are probably dealing with a case of true sciatica; if not, with one of sacro-iliac strain, the strain being accentuated by the pull of the hamstrings on the tuber ischii, which tends to rotate the ilium backwards on the sacrum. The sacro-iliac joint, by the way, is not a synchondrosis as usually taught, but a diarthrodial joint with a definite joint cavity, which proves the possibility of movement taking place.

If the movement described increases pain, the examination can be checked by placing the patient on the sound side, and then by pressing the ischial tuberosity forward with one hand while pulling the anterior superior spine backwards with the other. But, less frequently, the strain may be due to movement beyond the normal limit of the joint in the opposite direction. Examination must then be made by mobilising the joint in the opposite direction, which is done with the patient on the sound side. The knee is flexed and the hip is hyper-extended backwards, counter-pressure being exerted on the tuber ischii. The **Y**-shaped ligament then pulls the anterior inferior spine of the ilium downwards and rotates the body of the ilium forwards, thus laying strain on the sacro-iliac joint. Manipulation of the sound side will often produce pain on the injured side in severe cases, as it is possible thus to move the sacrum on the ilium, instead of the ilium on the sacrum as in the manipulations described.

If pain is elicited as the result of both forward and backward rotation of the ilium we are dealing with an arthritis—presumably a synovitis—of the joint; if movement in one direction only causes pain, the presumption is that a "locking" has taken place and that manipulation in the opposite direction will undo it. This is the type of case that the osteopath and bone-setter can relieve so readily. Manipulation is always worthy of a trial. But, failing this (or even if it is successful, in order to render recovery permanent), relief of symptoms obviously must depend on support of the affected joint. Fortunately, nothing nearly so drastic as the treatment suggested in your annotation is usually required. An ordinary cricketing belt, applied horizontally round the body below the anterior superior spines, will suffice in the milder cases, as also in those in which manipulation has been successful. (It can be kept in place by fastening it on to a corset.) If this is inadequate, a plate must be inserted under the strap over the sacrum and suprapubic regions. A more rigid support is given by prolonging the abdominal plate at both sides, so that a bar projects outwards, and thus secures a firm antero-posterior grip below the anterior superior spines. If made of metal a very secure grip can thus be secured under the strap, particularly if the abdominal plate is prolonged downwards so as to grip the pubic symphysis at the same time. Naturally, the longer the back-piece the more secure is the support. The disadvantage is that each case presents individual characteristics, and no "standard pattern" is possible. Each case has to be fitted separately; it is for this reason that many of the sacro-iliac supports, as made in America, fail, and, so far as I know, American surgeons do not realise the importance of the projections mentioned from the sides of the abdominal plate.

Adequate support of the type mentioned will often give relief, even if X ray examination reveals the presence of definite osteo-arthritic change which, in my experience, is very rare in this country—as your annotation remarks. Some patients require support in bed. The belt cannot be worn as it slips so easily. A binder, of the maternity type, is then applied over the lower abdomen and the upper half of the thighs, and is fastened as firmly as possible. Over this a webbing strap is applied in the position already indicated as firmly as possible, and is secured in place by safety-pins.

The question then arises, Are these cases common? I can only say that I fit anything from 70 to 100 supports a year, and I should judge that less than 5 per cent. are rejected by patients. I think this is proof positive of the value of the treatment, as no one would wear a contraption such as I have indicated unless it afforded very material relief. If only the eyes of the profession could be opened to the existence of this fertile source of pain and disability, not only would much injustice be avoided in industrial accidents, but an inestimable amount of needless suffering and disability would be alleviated if not entirely relieved.

I am, Sir, yours faithfully,

JAMES MENNELL.

Park-crescent, Portland-place, W., April 21st, 1924.

MEASLES AT ADVANCED AGE.

To the Editor of THE LANCET.

SIR,—The following case is of interest owing to the advanced age of the patient.

Mrs. ——, aged 83, was admitted here on April 4th suffering from senility and bronchitis. She was very ill and was placed in a small ward in which there was a patient who was recovering from measles. On April 13th she developed a typical attack of measles, and she died on April 17th. A daughter volunteered the information that her mother had never had measles previously.

Is there any record of measles in a patient older than this?—I am, Sir, yours faithfully,

J. BASIL COOK, M.D.

West Middlesex Hospital, Isleworth, Middlesex,
April 19th, 1924.

SCHICK IMMUNISATION IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—Dr. C. C. Okell and his collaborators, in their paper upon Diphtheria Outbreaks in Institutions in your issue of April 19th, refer to a previous article of mine which appeared in the *Medical Officer* (March 4th, 1922). Dr. B. A. Peters, in the same issue of THE LANCET, deals with Schick immunisation as applied to the nursing staff of the infectious diseases hospital of which he is in charge. May I state as briefly as possible my own experience of the Schick test as applied to the purposes detailed by your contributors.

Since 1921 I have consistently employed a combination of swabbing (of throat and nose) and the Schick test on the appearance of diphtheria in scarlet fever wards. I am able fully to support the statement of Dr. Okell and his colleagues that by such means the situation can rapidly be brought under control. Swabbing and the Schick test—without virulence tests—serve to divide the ward population into four classes as against six in Dr. Okell's paper. I have found that in a fever ward this is commonly sufficient. On occasion, however, we have also sought the aid of virulence tests when further discrimination seemed desirable. In a fever hospital, too, where patients in the ordinary course only stay for relatively brief periods, I have usually considered it preferable to afford the immediate protection of antitoxin to the Schick + swab + group. Active immunisation by toxin-antitoxin mixture has, however, been offered to and accepted by adult patients who had still some time to spend in hospital before discharge. With the above differences the disposal of the various groups is very similar to that recounted in the paper cited. I should add that the nursing staff working in the ward is always included amongst the "swabbed" (their Schick records are already available), and that on more than one occasion the source of infection has been traced to a Schick-negative-carrier nurse whose organisms have subsequently proved to be virulent.

With regard to the protection of the nursing staff, since the beginning of 1922, every nurse has been Schick tested on entry. During 11 months of 1922 and the whole of 1923 only naturally immune (Schick-negative) nurses were allowed to work in diphtheria wards. Although this procedure afforded a very drastic test of the value of the Schick negative reaction, it became necessary, in order that Schick-positive probationers might enter diphtheria wards, to produce active immunity amongst this group. At the present moment every member of the nursing staff is either naturally immune, or has been, or is in the process of being, actively immunised. In round numbers one-third of the nursing staff has been found to be Schick-positive; thus only one-third requires active immunisation if the validity of the negative Schick test be accepted. The following figures are of some interest:—

Year.	—	No. of cases of diphtheria admitted to wards.	No. of cases of clinical diphtheria amongst nursing staff.
1921	No discrimination of staff by Schick test.	1301	14
1922	Discrimination by Schick test commenced Jan. 28th.	1090	7
1923	Discrimination by Schick test throughout year.	1409	4

In 1923 the four nurses who contracted diphtheria were all Schick-positive probationers, who were working in scarlet fever wards, and, in the well-known manner of junior probationers, contracted the disease soon after entry. There have been instances where I have thought that the test had failed us, but I have had, on investigation and re-testing, to conclude that the technique or recording or toxin was at fault, and that the test itself is a true index of susceptibility or otherwise to *clinical* diphtheria. In this belief I am greatly supported by the critical human experiments of Guthrie, Marshall, and Moss.[1] In my experience, no indubitably negative Schick reactor has ever contracted clinical diphtheria as distinct from a transient tonsillitis associated with the presence of morphological diphtheria bacilli or a frankly "carrier" state.—I am, Sir, yours faithfully,

E. H. R. HARRIES,
Medical Superintendent, Birmingham City Hospital, Little Bromwich.
April 24th, 1924.

To the Editor of THE LANCET.

SIR,—The points raised by Dr. C. W. Hutt in your issue of April 26th were emphasised by myself two years ago in papers published in THE LANCET (1922, i., 312) and in *Public Health* (May, 1922). I pointed out that the age-groups which gave the greatest number of Schick-positive reactions exactly coincided with the age-period when the incidence of clinical diphtheria is most marked—viz., 2–5 years. Furthermore, I suggested that the public health authorities, through their child welfare and school medical services, were in a position to test and immunise that portion of the population most susceptible to diphtheria.

The Schick test and toxin-antitoxin immunisation constitute one of the most notable recent advances in the sphere of preventive medicine, and the results, which are on record, obtained during the last ten years in New York sufficiently demonstrate its value. At any rate, it is not too much to say that it is possible that the thorough systematic adoption of toxin-antitoxin immunisation against diphtheria would result in a great yearly saving of child life. May one hope that, without more ado, those who specialise in preventive medicine will use their organised services to employ an agent which is potent to prevent diphtheria? I am, Sir, yours faithfully,

Bedford-square, W.C., April 28th. T. E. DICKINSON.

AURAL VERTIGO.

To the Editor of THE LANCET.

SIR,—Dr. E. Hobhouse in his interesting letter on this subject, in your issue of April 19th, expresses surprise that in the recent discussion on vertigo at the Royal Society of Medicine "no one pointed out that perfect equilibrium is possible when the semicircular canals have been completely destroyed or rendered functionless by disease or operation." For equilibrium the labyrinths of the two sides should be equally active or equally functionless, and in the most typical cases of aural vertigo there is a unilateral lesion with preponderance of the sound labyrinth over the diseased one. The vertigo would probably come to an end if the healthy labyrinth were rendered functionless to the same extent. This might be imitated to some degree by the administration of a drug capable of diminishing the sensitiveness of the healthy labyrinth. Such a drug we have in quinine (and the salicyl compounds), and doses so small as hardly to affect the auditory part of the labyrinth can produce the desired sedative effect on the equilibrial part. In proof of this I have treated many cases of aural vertigo from unilateral lesions of the labyrinth with small doses, say one-half or even one-third of a grain of sulphate of quinine, almost invariably with relief from the vertigo. In proof that this result is due to a sedative action on the sound labyrinth I have measured the length of time necessary for the caloric induction of nystagmus and found that after treatment by means of quinine the time necessary was considerably longer than before and the relief from vertigo was due to the approximation to an equalisation of the action of the two labyrinths to which I referred in my contribution to the discussion (THE LANCET, March 1st, 1924, p. 446).

I am, Sir, yours faithfully,
JAMES DUNDAS-GRANT.
London, W., April 28th, 1924.

ANTILEUCOCYTOLYSINS.

To the Editor of THE LANCET.

SIR,—I have read with great interest the article by Dr. Ivan Manoukhin in your issue of Jan. 26th. The "self-defensive reaction" which he there describes in the treatment of malaria could, presumably, be used for other diseases. On one point I should like more information, however, and that is the function of the antileucocytolysins, and of the organ that forms them—the liver—in the defences of the body. I gather from the article that they have a defensive rôle which comes into play at a later stage than that of the leucocytolysins, but their mode of action at this later stage is not made clear.

I am, Sir, yours faithfully,
Thaba 'Nchu, S. Africa, March 15th, 1924. C. LUNDIE.

HYMENOLEPIS NANA AND *H. FRATERNA*.

To the Editor of THE LANCET.

SIR,—Joyeux, in 1920, after a survey of most of the evidence, arrived at the conclusion that *Hymenolepis nana* of man and *H. fraterna* of rodents, though apparently indistinguishable in all characters, both of the adult worm and of the egg, are yet two distinct *physiological* species. More recently, however, two Japanese investigators, Saeki and Uchimura, have denied the validity of the experiments described by Joyeux, and affirm that it is possible to infect mice with *H. nana* eggs. The original papers of these two Japanese investigators not being easily accessible, and the brief abstracts available providing little or nothing of that detailed information which is so essential in these matters, I have recently been enabled, by the kind hospitality of Dr. A. Bettencourt, to re-examine the subject. Briefly stated, I conveyed to Lisbon 57 *H. fraterna*-free mice, 30 of which I have fed on fresh *H. nana* eggs obtained from the stools of infants in the hospital attached to the Instituto Camara

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[1] Experimental Inoculation of Human Throats with Virulent Diphtheria Bacilli, J. Hopkins Hosp. Bull., 1921, xxxii., pp. 369–78.

Pestana, the remaining 27 serving as controls. In the first batch of *H. nana* egg-fed mice, two were infected out of ten; in the second batch of 13, four were infected; and in the third batch of seven one only was infected. Thus 23 per cent. of the mice were infected—a result which is satisfactory in view of the fact that all the mice were adults and therefore largely refractory to infection. The 27 control mice showed no signs of infection, and thus the possibility of accidental infection with *H. fraterna* is entirely excluded. Saeki and Uchimura are therefore correct in their view that *H. nana* and *H. fraterna* are one and the same species (though the converse experiment of infecting monkeys or man with *H. fraterna* of mice and rats is still a desideratum), and doubtless man has become secondarily infected with a parasite which originally was associated with mice and rats alone.

Full details of the experiments referred to above will be published at an early date.

I am, Sir, yours faithfully,
W. N. F. WOODLAND,
Helminthologist, Wellcome Bureau of Scientific Research, Instituto Bacteriologico Camara Pestana, Lisboa.

April 24th, 1924.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. F. Bolster is placed on the retd. list with the rank of Surg. Capt.

Surg. Lt. N. B. de M. Greenstreet to be Surg. Lt.-Comdr.

To be Surg. Lts.: R. W. C. Bull, J. B. Horam, and G. J. Hamy.

ROYAL NAVAL VOLUNTEER RESERVE.

A. M. MacGillivray, late Temp. Surg. Lt., R.N., to be Surg. Lt., R.N.V.R.

ROYAL ARMY MEDICAL CORPS.

Capt. W. D. Whamond retires, receiving a gratuity.

TERRITORIAL ARMY.

Col. C. P. Oliver, having attained the age limit, is retired and retains the rank of Col. with permission to wear the prescribed uniform.

Lt.-Col. J. S. Warrack, from R.A.M.C.T.A., to be Col. and Asst. Director of Medical Services, 44th (Home Counties) Divn., T.A., vice Col. C. P. Oliver, who vacates on completion of tenure of appt.

Maj. A. Thomas, having attained the age limit, is retired and retains the rank of Maj. with permission to wear the prescribed uniform.

Maj. (Prov.) J. Wallace is confirmed in his rank.

Lts. A. H. Richardson and R. K. Nisbet to be Capts.

A. F. G. Guinness (late R.A.M.C.), H. A. Eadie, and W. R. S. Watkins (late R.A.M.C.) to be Lts.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. G. T. Willan, from the active list (supernumerary), to be Lt.-Col.

ROYAL AIR FORCE.

R. L. C. Fisher is granted a short service commission as a Flying Officer.

INDIAN MEDICAL SERVICE.

Majs. H. S. Matson, A. Cameron, A. H. Proctor, R. T. Wells, I. M. Macrae, A. S. M. Peebles, F. B. Shettle to be Lt.-Cols.

Lt. (temp. Capt.) Vijaya Shankar Rao Pandit to be Capt.

The King has approved the retirement of Maj. C. H. Brodribb (temp. non-effective list) on account of ill-health.

SOUTH LONDON HOSPITAL FOR WOMEN.—A new wing for surgical patients at the hospital, Clapham Common, S.W., will be opened by the Duchess of York on May 22nd. This extension will entail an additional expenditure of £6000, and every effort is being made to collect this sum before May 22nd, so that Her Royal Highness may be presented with purses containing sufficient to pay for the first year's maintenance. Any wishing to present purses (£10 or over) on this occasion are asked to communicate as soon as possible with the secretary at the hospital.

THE HOSPITAL PROBLEM.

CONFERENCE AT WESTMINSTER.

ON Monday and Tuesday, April 28th and 29th, a largely attended conference of hospital, medical, Labour, and kindred organisations was held at Caxton Hall, Westminster, to discuss the best method of hospital administration and control. At the first session the Labour view was set out by Mr. Somerville Hastings, M.P., the chair being occupied by Mr. Herbert Morrison, M.P.

The Premier's Letter.

Mr. Ramsay MacDonald wrote expressing his regret at being unable to attend and welcome the speakers. He said no one could ignore the straits into which war's aftermath had placed so many hospitals. Our hospital system—if the chaos now existing could be so called—remained a symptom of our inadequate civic organisation, but it fell far short of the achievements its keenest friends and supporters desired. Pending the day when the country became more fully aware of the need of prevention of destitution and disease, we could not stand idly by and allow our curative centres to suffer from neglect. The field of hospital activity should be surveyed, and ways and means devised whereby the great services thus rendered might be pursued free from the unhealthy methods by which some of our hospitals had had to seek finance in these latter days. The needs of the time demanded the application of the scientific spirit, the coördination of effort, and the elimination of waste. He felt strongly that society had never yet appreciated and valued the labours of those great public servants who, often without fee, reward, or publicity, were striving in the spirit of true scientific research to reduce the sufferings and increase the health of our frail bodies.

The Chairman paid a high tribute to the work the voluntary hospitals had done, and said the Labour Party yielded to none in admiration of it. The great question now was whether those hospitals could meet the requirements at present existing. If it could be shown that they did and could, he would not further ask for either State or public control. The sole test was efficient and effective public service.

The Labour View.

Mr. Somerville Hastings, in presenting the Labour view, said he had constantly in mind the great mass of the men and women who made use of the voluntary hospitals, which institutions provided practically the whole of the general hospital accommodation in Great Britain. But was the system likely to last for ever? Were the conditions which brought forth the establishment and the endowments of these hospitals likely to persist? There had hitherto been in this country a very wealthy class and a poverty-stricken class, but in the future conditions would be such that the poor would depend less on the bounty of the rich, and probably the rich might have less to give. Experience had shown that social movements in the experimental stage were best managed by voluntary effort, but when such a movement became a necessity it was better to look for support to a central or a local authority. There were certain disadvantages associated with the voluntary system because it was voluntary. First, there was lack of coördination: each hospital was a law unto itself. Secondly, as many general practitioners were not associated with a hospital, continuity of treatment did not exist. Thirdly, there was the danger that the medical necessity of the patient might not be the sole consideration in selecting cases for admission to hospital; there was certainly a tendency for those in authority at these hospitals to admit under easier terms patients who happened to be sent along by subscribers. Fourthly, too much energy and resource had to be expended by administrators of hospitals in collecting halfpence. The main difficulty, however, was that the voluntary system had provided only about one-third of the hospital accommodation required to-day, and the Poor-law infirmaries which attempted to make up the deficiency did not succeed in doing so, and meanwhile the deficiency was becoming more pronounced. And patients' payments made the demand on hospital beds even greater. Among the attempts to bolster up the voluntary system was that adopted in some Northern towns, of deducting from workers' wages 1*d.* or 2*d.* per week, as agreed ; this was less equitable than a rate or tax. He contended that payments by patients tended to act as a deterrent or to rob the poorest of the necessities of life, and threatened to change hospitals into nursing homes for the middle classes. Workmen might be in this way contributing towards the cost of treatment of men better off than themselves. He did not doubt that people who were very poor considered it a disgrace and would suffer anything to hide it. Put very bluntly, he believed a man had only to be a good liar and dress poorly to enter any hospital, whatever his riches might be.

The only way out of this impasse was for the State to shoulder the responsibility of providing medical treatment for all who needed it. Labour looked upon health as a national concern, and saw the danger of leaving it to charity or private enterprise ; it desired treatment centres to be set up in outlying districts, local or cottage hospitals in the smaller towns, county hospitals conveniently situated, and national hospitals in the chief cities. It would organise intimate coöperation between all hospitals, and, where necessary, make easy transfer from one to another. This would have to be evolved by stages. Poor-law infirmaries should be taken over by local health authorities and converted into first-class general hospitals, for use without the taint of pauperism. Many of the country mansions now being offered for purchase would make good convalescent homes.

Discussion.

Viscount Knutsford said that 43 per cent. of the London Hospital patients were so poor that they could not pay anything towards the cost of their treatment. Any man, whether artisan or member of the middle class, came into the category of the necessitous poor if he could not afford to pay for the treatment he needed.

Dr. G. R. Ward (Medical Practitioners' Union) thought Poor-law infirmaries were wanted not as first-class hospitals, but as less pretentious ones to which patients could be drafted.

Mr. T. Lewis told how, in his Yorkshire locality, the workers coöperated in supporting the hospital, gradually working up to 3*d.* in the £ wages, and colliery proprietors and heads of industrial firms added to the contributions.

Miss Maud McCullum (Professional Union of Trained Nurses) emphasised the desirability of coördinating cottage hospitals in small districts and county hospitals with the national hospitals in large towns. That obtained in Denmark, and she had never seen better organisation anywhere.

Mr. L. A. Hill (Association of Approved Societies) spoke of the great need for removing the pauper taint, failing which many beds in Poor-law establishments would remain empty.

Dr. Astley V. Clarke (Leicester) said there was a large working-class element on the board of the Leicester Hospital, and they were the last persons to want a State hospital service. These men were responsible for the collection of £30,000 a year, and ran their own convalescent homes. The Labour view did not take sufficient cognisance of the mentality of the people.

Dr. Wilfrid S. Fox (St. George's Hospital) declared that patients were not admitted to hospital by anyone who knew of their means ; the latter were inquired into by the almoners. Before seeking to destroy something which was admittedly doing very good work, careful consideration should be given to what it was proposed to put in its place. Hospitals existed not only for the benefit of patients, but also for research and the training of medical men.

Lady Barrett (Royal Free Hospital) maintained that the efficiency of the voluntary hospitals was constantly growing, and that they had an enormous vitality behind them. It was quite conceivable that the State should come in to do what the voluntary hospitals had left undone.

Sir Thomas Neill spoke of the importance of the community feeling the need of the spirit of self-sacrifice.

Dr. Ethel Bentham instanced cases to show the difficulty experienced by general practitioners in getting urgent cases into hospital and also the lack of coördination. It was very difficult to find out what treatment a case had had in hospital. She protested against the indignity of the antics of students and others dressed as clowns soliciting pence for the support of the hospitals.

Mr. N. Bishop Harman spoke of the inadequate representation of the hospital accommodation of the country in the Labour Party pamphlet, which did not include beds in fever, small-pox and other hospitals, and mental institutions and sanatoriums.

Mr. G. P. Blizard declared that the Labour Party had no wish to damp down any enthusiasm for voluntary hospitals ; he pleaded for a complete system of hospitals for the country. Some hospitals were full and had a long waiting-list, while others not far away had vacant beds.

Mr. H. S. Souttar, speaking as a surgeon at London Hospital, said the only criterion for the admission of a patient was his medical or surgical need. It was hard luck that because a man had lived an industrious and careful life and saved a little money that it should be a barrier to keep him from hospital treatment when he needed it. The present requirement was an extension of the present system, and to that the Labour Party should direct their efforts.

Mr. Allen Clarke (London Panel Committee) contended that there was no reason why the benefits hospitals could confer should be restricted to the poorer classes, nor why an income limit should be set up. Private paying patients in hospitals did not finance those hospitals, and these did not provide the solution of the problem.

Dr. H. B. Morgan pointed out that the British Medical Association represented only half the profession in the country. He criticised the present out-patient departments, where ordinary patients were kept waiting in close contiguity with dangerously infective ones.

Dr. A. H. Bygott spoke as a member of the Labour Party and a M.O.H., and said the party were out to fill up the gaps on this hospital question. There was a great need for young surgeons to go and do operations at the smaller hospitals. The Labour Party, having attacked this problem, were not likely to turn back.

Mr. S. R. Lamb related the success which had been achieved in Sheffield by the hearty coöperation of the workers and the employers of labour ; the civic spirit in regard to hospitals was there very manifest, and was a great factor in the success.

Mr. Hastings briefly replied, commenting on Lord Knutsford's statement that 43 per cent. of the London Hospital patients could not contribute anything to the cost of their treatment. The hospital was founded for those very people, and the statement showed that the hospitals were gradually being utilised by people better off, even by members of the middle and professional classes. An essential point about the Poor-law infirmaries was that the deterrent spirit obtaining applied even to medical treatment, and the latter was designedly less good than that obtainable elsewhere.

The Voluntary Hospital View.

On Monday afternoon the subject of discussion was " The Voluntary View," the chair being occupied by Dr. Bygott.

Viscount Knutsford, in his opening address, said he did not suggest a continuation of the voluntary hospitals because he was connected with them, nor because he thought they had no faults and could not be improved. He believed they could easily be made to meet the present needs. If the Labour Party would propose anything which would lessen suffering more than did the present hospitals, it would receive his warm support. Was the history of State control such as to induce us to hand over our sick poor to the State? The State stood in the dock with many previous convictions for neglect against it; it had done nothing over a long course of years to see that the guardians had properly carried out their duties to the sick poor; only in recent years had the guardians taken the great steps forward which had been achieved. Guardians were not elected because of any special work in a knowledge of hospitals. He mentioned with special approval, however, such Poor-law infirmaries as Lambeth and Whipp's Cross, but said that, speaking generally, the object of guardians seemed to be to do as little as possible for the sick poor. The fact was that the people of England had learned to hate the Poor-law infirmaries, and would rather die than go into them. He criticised the inadequacy of the Government arrangements to deal with the sick and wounded in the war, and showed how much superior was the organisation of voluntary hospitals. If hospitals were controlled by the State there would be no grace added to the duty, none of that spirit which added beauty to duty. The voluntary hospitals of this country had brought to the sick poor the best medical attendance and nursing in the world. The recent committee of 12 eminent men took evidence about voluntary hospitals and stated it would be lamentable if by our apathy and folly it was suffered to fall into ruin, and they recommended a grant of a million pounds, which a parsimonious Government reduced by a half. All the progress in medicine and surgery had emanated from the voluntary hospitals; public or State-managed hospitals could not have approached such a record. If there was pressure work at voluntary hospitals it was done; there was no question of "down tools" or thought of overtime; no doctor worked with his eye on the clock. To thank a surgeon for coming down to the hospital at midnight to perform an urgent operation would be to insult him. The spirit in regard to those who came to their doors was not "What do you want?"; it was "What can we do for you?" and the object was to do it in the kindest way possible. The pamphlet issued by the Labour Party quoted the late Charles Locke's words, "The voluntary hospitals are the greatest pauperising agency in this country." But was it pauperising to help a fellow creature when he was down, to help a child when it was ill, to help a mother to get through her troubles? If so, it was time to tear up the Sermon on the Mount and go in for the cold code of the Charity Organisation Society. In the treatment of the sick there must be a standard, an ideal, to work up to. Hospitals were too often dependent on some amiable fanatic who combined with the manners of a gentleman the instincts of a felon. If there was a strong belief in the treatment of the sick in voluntary hospitals every effort should be made to strengthen the system, instead of starting something else which history had shown to be bad. Viscount Knutsford proceeded to answer the allegations of abuses which the Labour Party pamphlet contained. With regard to nursing, in four years only 47 nurses out of over 700 had resigned or been required to resign on account of ill-health. He argued that the increased demand for hospital treatment was a tribute to the kind of treatment given.

With regard to the remedy, the money was to be got shortly by a payment by everybody before reaching the age of 25 and arriving at responsibility, and there should be a scheme such as a hospital saving association to assist those who needed the hospitals. He would have taken off the income-tax figures all contributions to hospitals, and a similar deduction should be made from death duties. The general practitioner should be helped, not harmed. Surely the best plan was to strengthen what was admittedly good, rather than to change to a system which history did not support. State management would satisfy nobody.

Lord Somerleyton (the King's Fund) spoke of the improvement which the hospitals of London had steadily undergone during recent years. If rates were levied for the hospitals, voluntary subscriptions to them were practically certain to cease. Difficulties had arisen in respect of voluntary hospitals not so much because of decreased subscriptions as in consequence of increased cost of requisites; but even so, the deficits had been progressively decreasing, for whereas in 1920 the deficit was £383,000, in 1922 it was £174,000, and it was estimated that 1923 would show a surplus of about £200,000, owing to some large legacies. Even without the latter, the deficit for that year would have been only about £25,000.

Sir Alan Anderson considered the Labour Party pamphlet was well written but inhuman. A great economic revolution had been taking place in this country, whose inhabitants could no longer be sharply demarcated into rich and poor; there was now a great independent working class who were very proud of their individuality. The system of regular deductions from wages for hospital support was growing in a very satisfactory manner, and had extended to London. It was absurd to think the voluntary system was going to break down because of financial difficulties; a charge for treatment in disease was as reasonable as the provision of boots, clothing, and food for the maintenance of health.

Colonel F. E. Fremantle, M.P., argued that the big complicated London hospitals should not be taken as the model, but the cottage hospital which served the needs of a rural community with the coöperation of the general practitioner.

Mr. Canter said it was agreed that the present hospital accommodation was totally inadequate for requirements, hence it was necessary to try to find a way out. He contended that the proposals of the Labour Party had not yet really been contradicted. Two out of every three persons requiring hospital treatment were not receiving it. Many cases could only be expected to recover if they were taken from their bad home surroundings and treated in hospitals. He pleaded for hearty coöperation on the part of all interested in the question.

Dr. C. W. Saleeby spoke of the need for a more healthy mode of living, which would render hospitals less necessary. He thought too much was expended on bricks and mortar for hospitals, and too little attention bestowed on obeying the laws of health. Let all combine to work away at the prevention of disease.

Dr. H. B. Morgan contended that the Poor-law infirmaries were not the Labour Party hospitals, but were the Tory Party hospitals. It should not be beyond the wit of man to work them into an efficient auxiliary to the voluntary hospitals.

Mrs. Bond said she represented 52,000 married working women, many of whom had experienced the hardships of the present hospital system, the hours spent waiting for attention to a sick child with a husband and family waiting for their dinner at home. She alleged that many nurses suffered from flat-feet and varicose veins owing to the long hours of standing and poor food. Maternity and child welfare work was brought about by the agitation of the masses of the people, and something of the kind was needed in regard to hospitals, as voluntary work had only partially succeeded.

Miss McCullum said the Labour Party statement in regard to nurses was certainly a true bill in every respect. They were underpaid; after serving four years in a hospital she was supposed to be passing rich on £50 or £60 a year.

Mr. Somerville Hastings complained that the Labour Party pamphlet was frequently misquoted. State-controlled hospitals in such countries as Switzerland, Germany, and Austria were successful, and a great deal of original research work was done in them. The outstanding fact in this country was that there were not sufficient beds, and the question was how were they to be provided? There should be State assistance, as a poll-tax affected everybody equally and not, as it should, according to their ability to pay.

Mr. Blizard said the pamphlet represented the very carefully considered opinion of a large committee on which eminent doctors and publicists were represented.

Viscount Knutsford briefly replied.

The Doctors' View.

On Tuesday morning the chair was occupied by Mr. Blizard, when the subject was The Doctors' View.

The Chairman said the subject should really be the British Medical Association's view, for among doctors there was a great divergence of view. If a start were made de novo, the function of the doctor should be regarded as keeping the people well, not to attend them in sickness. There was a great need for team work, for a pooling not only of financial resources but of medical resources. He hoped the libel would be put to rest that directly a doctor became a public servant he lost his better feelings. The Labour Party would go a long way towards placing the management of the hospitals in the hands of the doctors themselves. The Minister of Health had already set up a committee to inquire into the inadequacy of the number of hospital beds in this country and their unsatisfactory distribution.

In a long and exhaustive address Mr. Bishop Harman dealt with a very large number of points. He said the provision of money must depend upon policy, therefore policy must be defined. The Labour Party's scheme of hospital policy consisted of 13 propositions. The policy of the British Medical Association was the result of the slow growth of opinion, and had been discussed and voted upon by the divisions of the Association. It was based upon the direct experience of men engaged in the practice of medicine, and the application of that policy to the present-day conditions would secure steady improvement in hospital work. The difference between the State hospitals on the continent and the voluntary hospitals in this country was primarily due to a different outlook upon life and organisation. The policy of the Labour Party in this respect was revolutionary, that of the British Medical Association evolutionary. The former had found but little support from doctors. He proceeded to deal in detail with the 13 propositions of the Labour Party, remarking that Nos. 2, 3, 4, 8, and 10 were common ground. He objected that the number of available beds in the country given in the pamphlet was far short of the actual truth, for it did not include Poor-law hospitals, sanatoriums, mental and special hospitals. Including these, Great Britain possessed ten hospital beds per 1000 for the 38,000,000 people, the best proportion in the world. He had a particular objection to the part of the pamphlet which dealt with what were termed "anomalies of the voluntary system," one of them being stated to be that the number of appointments in hospitals was jealously guarded, with the result that all the big hospitals were badly understaffed. The statement that preference for admission was shown to those who could pay he stigmatised as absurd.

With regard to the policy of the British Medical Association, at present there were voluntary and statutory hospitals scattered through the country, mostly without any general plan of covering the ground, and no plan of coördinated effort. The Association believed that the defect could be removed if the mechanism of consultation between the several hospital authorities were provided. But to bring all hospitals to a uniform level of State control would be to find the "least common multiple." It was considered that the local committees should be extended so as to make them the coördinating bodies for all hospital accommodation required within their areas, including voluntary, municipal, and Poor-law, provided that the areas covered by the committees should be large, and that the personnel of these committees should include representatives of all the hospitals or hospital authorities concerned. Secondly, that the terms of reference to these committees should include a survey of all the hospital accommodation of the area, a determination of its adequacy, and the coördination of all the accommodation in the area, and the recommendation of any necessary additional accommodation. The committees should not interfere with the domestic autonomy of the hospitals; each type of hospital should be encouraged to work upon those lines of local initiative which had proved so vital in hospital work. Thirdly, the scope of the Voluntary Hospitals Commission should be extended to make it a standing consultative hospitals committee for England and Wales, and it should act as between the Ministry of Health and the local committees in all matters concerning hospital policy and the allocation of any grants which might be allocated to hospitals not directly supported by the State in its various functions. The voluntary hospitals, he declared, remained the pioneers of medicine. He did not think there would ever be any lack of funds or services for those who were in need. The Association considered that every patient of a voluntary hospital who was able to make a contribution towards the cost of maintenance and medical treatment should do so, unless the contributory method of subscription was adopted as essential in industrial areas.

Mr. Harman concluded by dealing with various contributory schemes and the costs, remarking that much could be done to relieve the voluntary hospitals of a heavy charge upon their resources by more generous grants in aid of education.

Discussion.

Miss Bond (the College of Nursing) alleged that nurses had in the past been overworked and underpaid, but the College she represented was doing its utmost to raise the standard of service and remuneration, thus rendering the nurse even more a helpful colleague of the doctor in prevention and cure of disease.

Dr. E. A. Gregg (Medical Practitioners' Union) called for a better relationship between the general practitioners and the hospitals, and declared that hospitals would probably not be called upon to treat, especially in the out-patient departments, many cases now dealt with there. His union asked that the general practitioner should be allowed to go back to the hospital for a portion of his day's work, for no one recognised better than the general practitioner his own limitations.

Mr. G. W. Canter (Post Office Workers' Society) contended that some of Mr. Harman's arguments were directly in favour of what the pamphlet put forward. The Labour Party wished to coöperate with those who had greater experience than themselves, and if this meeting showed a proper spirit of coöperation tangible results in dealing with the problem would ensue. He had found that workers were less inclined towards the local tax now that the friendly societies had come forward with grants, and he found it difficult to convince them that the two combined did not pay for the treatment.

Dr. May Dickinson Berry spoke of the changed conditions of the country since the war. People who before the war had the money and continued the tradition of giving had now largely lost it, and those who now possessed it had not acquired the giving tradition. She emphasised the strong self-reliant British character as a factor in the situation, which she was the more impressed with after a considerable sojourn abroad.

Mr. R. Lindsay (British Dental Association) asserted that the voluntary system of this country in so far as it applied to dental treatment was an absolute failure. Dentists had supplied not only the services, but also the money for the support of dental hospitals, which was very unsatisfactory, and all would agree that the money should come from elsewhere. It ought to be possible to devise some means whereby an efficient public dental service could be maintained.

Dr. Alfred Cox (Medical Secretary, B.M.A.) said that in initiating this conference the Labour Party had set an example which might very well have been followed by others. It had certainly justified itself. The great question was as to whether there should be further State assistance to the maintenance of hospitals. The answer obviously was in the affirmative, and what had to be agreed was how it was to be given. Some objected to the obvious intention of some Labour people to discourage the feeling of helping oneself, preferring a pooling of resources and doing everything through a committee. He regarded Mr. Harman's suggestion as the best way out. He sincerely hoped that before the conference closed some via media would be found to enable the two parties to travel side by side.

Dr. Gordon Ward said the large hospitals in London were aggregated in a manner greatly to their disadvantage. If the Poor-law infirmaries were to be brought in, the staffs would have to be drawn from the locality. Seventy-five per cent. of the cases dealt with in the large London hospitals could be as well dealt with in the country, and he asked whether it was intended that the general practitioner should normally function in the hospital work.

Mr. Lingstrom (National Conference of Friendly Societies) hoped a result of the conference would be the appointing of a Royal Commission to inquire into the matter thoroughly. Whatever might happen, he hoped this country would be spared the German cast-iron system.

Dr. Astley Clarke (B.M.A.) said the Leicester Hospital had no paid beds and no almoner, but in that town a hospital conscience had been aroused, and in 18 months there had been collected £75,000. He thought medical students at the large teaching hospitals did not receive sufficient clinical experience, hence there should be a system of drafting such students from the large hospitals to the smaller provincial ones.

Mr. Hill (Association of Approved Societies' Secretaries) denied that the Labour Party's hospital policy was revolutionary. If an increased grant was to be obtained, it surely was reasonable to have State control. He criticised the conditions at out-patient departments.

Dr. Gordon Dill spoke of the Sussex contributory scheme, which numbered 17,000 beneficiaries, and had been very successful.

Mr. H. S. Souttar (B.M.A.) said London Hospital would welcome lay coöperation from any source, and said he considered the Labour Party pamphlet was a statesmanlike document. He expressed admiration of State and municipal hospitals and their equipment on the continent.

Mr. Harman replied.

The State and Rate-aided Hospitals.

This was the subject for discussion at the last session on Tuesday afternoon. Mr. Canter occupied the chair.

Dr. John Buchan (Bradford), in introducing it, said the hospital problem in this country in its present form owed its origin to four factors: (1) an increasing urbanisation of the population, with a deterioration of the living conditions and an incoming of many serious cases of illness requiring hospital treatment; (2) the awakening of the health conscience of the people, causing a demand for further hospital provision; (3) more care and thoughtfulness in the means for the relief of poverty; (4) the increasing improvement and complexity in medical and surgical science, bringing within scope of the hospital many cases which previously could be treated at home. A way out of the heavy demand was found in the establishment of rate-aided hospitals, and the work of these had so extended during 50 years that they now provided 75 per cent. of the hospital accommodation of the country. Admittedly there was a deficiency of hospital accommodation in all parts of the country, and he thought the need was most acutely felt in the newer industrial areas. Bradford was a good illustration of this, where the only general hospital contained less than 200 beds, and for many years the working classes of Bradford needing treatment had to resort to the Poor-law infirmary, which they did unwillingly. After the war, the Poor-law authorities and the city council conferred, with the result that the infirmary, containing 1000 beds, was handed over for use by the council as a general hospital. In 1920 the admissions numbered 3804, in 1921 4482, in 1922 5141, and in 1923 5608, both patients on the order of the relieving officer and those recommended by general practitioners being admitted. The institution had now gained for itself a high local reputation. He had much to advance in support of rate-aided institutions, specially instancing the brilliant advances made by the officers of the R.A.M.C. in the last 30 years. At Bradford an attempt was made to bring the general practitioner into the scheme, but he did not come; usually his life was too busily occupied.

Dr. Gregg, dealing with the last point, thought it a great pity that the general practitioner should have to work so many hours a day in order to make a living.

Mr. Harman reminded the meeting of the attitude of the B.M.A. on the Bradford matter, and on the general question declared that the desire was for the work of the State in this connexion to be directed into profitable channels.

Sir Thomas Neill emphasised the necessity of the beds now empty in State institutions being utilised, and urged that no further time should be spent in conferences, but action should be taken without further delay.

Colonel Fremantle, M.P., said the difficulty which Parliament would at once point out was that hospital provision was asked for for those who could pay as well as for those who could not, and if hospital treatment was to be free to all classes it would mean an expenditure of many hundreds of millions of pounds a year. He advocated the linking of the finance of this on to the present system of national insurance.

Mr. Lesser agreed that if the financial part of the problem could be settled, many of the other difficulties would disappear. He thought it was questionable whether Colonel Fremantle's financial idea was practicable, but it might be possible to develop the matter along the lines of the Hospital Saving Association.

Dr. G. E. Carter, in a general review of the situation, said he had worked in Bradford Hospital, and the infirmary there was largely supported by mill-owners, whose workpeople received treatment there, and those owners thereby made a very good investment.

Dr. C. Buttar did not see why the hospital question should not be set on its legs on voluntary lines; he would like to see the hospitals run without any State aid at all.

Resolutions.

After considerable discussion the following resolutions were carried without dissent (Lord Somerleyton, Mr. Buchanan, and some others intimating their intention not to vote either way, as they had no authority from their respective bodies).

1. The accommodation, equipment, and finance of hospitals generally are inadequate, and must be supplemented.

2. The geographical distribution of hospitals is uneven, leading to overlapping and the lack of coördination. The unit of such coördination should be such as to include a sufficiently large population.

3. There should be a closer relationship between voluntary hospitals themselves, between the voluntary hospitals and the various hospitals provided by local authorities, between the curative and preventive medical services, and between the hospitals and the private medical practitioner.

4. Some form of public assistance is essential if a complete and adequate hospital system is to be maintained, and developments should be directed to preserving what is best in the present voluntary system.

5. The infirmaries at present under the Poor-law should be thrown open to all citizens and removed from all taint of the Poor-law.

Organisations Represented.

The following organisations were represented at the conference :—

British Medical Association; Medical Practitioners' Union; Medical Women's Federation; Federation of Medical and Allied Services; The Sheffield Joint Hospitals' Council; Montagu Hospital, Mexborough; British Dental Association; Royal British Nurses' Association; The College of Nursing, Ltd.; National Council of Trained Nurses of Great Britain and Ireland; The Professional Union of Trained Nurses; Queen Victoria's Jubilee Institute for Nurses; The General Nursing Council for England and Wales; Joint Committee of Approved Societies; The National Association of Trade Union Approved Societies; National Conference of Industrial Assurance Approved Societies; The Association of Approved Societies; National Association of Insurance Committees; National Federation of Employees' Approved Societies; The Incorporated Association of Approved Society Secretaries, Ltd.; National Conference of Friendly Societies; Panel Committee for the County of London; Hospital Saturday Fund; King Edward's Hospital Fund for London; The Hospital Saving Association; The British Charities Association; The British Red Cross Society; Standing Joint Committee of Industrial Women's Organisations; The People's League of Health; The League of Mercy; Royal Institute of Public Health; British Hospitals Association; St. George's Hospital; St. Bartholomew's Hospital; London Hospital; St. Thomas's Hospital; University College Hospital; Executive Committee of the Labour Party; Labour Party's Advisory Committee on Public Health.

THE LABOUR VIEW OF THE POSITION OF HOSPITALS.

IN the course of the conference on the Hospital Problem at Caxton Hall reference was made to the statement of policy of the Labour Party with regard to hospitals.[1] This pamphlet was noticed in THE LANCET (1922, i., 808). For the convenience of our readers we reprint here the summary which concludes the pamphlet.

1. The Labour Movement, recognising the importance of health to individual and national well-being, considers that all hospitals, both special and general, together with allied institutions, should be so organised under one authority as to form the foundation on which a complete hospital system for the nation with sufficient accommodation to deal with all cases requiring institutional treatment can be built.

2. It would establish treatment centres in outlying districts, local or cottage hospitals in the smaller towns, one or more county hospitals conveniently situated in each public health area, and national hospitals in London and Edinburgh and other University towns.

3. It would organise intimate coöperation between all the hospitals in each public health area and also between them and the nearest national hospital. It would make arrangements for easy and rapid transference of patients from one hospital to another according to the nature and requirements of the case.

4. It would organise intimate coöperation between the medical staffs of the various hospitals, and also between them and general practitioners, making the participation of the latter an essential feature of the hospital scheme.

5. It would provide the health authorities with sufficient beds under their own control to deal with all patients for whom they have already undertaken the responsibility. (Patients suffering from tuberculosis or venereal diseases; children from the school clinics; mothers and infants from the maternity and child welfare centres; and adults under the National Health Insurance scheme.)

6. It would introduce the necessary legislation for the transference of the Poor-law infirmaries from the guardians of the poor to the local health authorities, thus placing at their disposal many beds now vacant. It would remodel these infirmaries, where necessary, equipping and conducting them in every way on the lines of the best existing general hospitals.

7. It would give voluntary hospitals the option of being taken over by the health authorities entirely, of remaining on a voluntary basis entirely, or of receiving grants from public funds conditional on efficiency and the representation of the local health authority on the boards of management. It would secure close coöperation between those remaining entirely on a voluntary basis and the public hospitals.

8. It would relieve pressure on hospital beds in the cities and towns by acquiring convalescent homes in the country, into which should be admitted cases of threatened breakdown, and patients no longer requiring hospital treatment, but not sufficiently recovered to return home.

9. It would establish free dental clinics connected with all hospitals, believing that supervision and treatment of the teeth are essential to health.

10. It would also arrange a scheme for visiting nurses and home helps in connexion with the hospital system, and lays special stress on the importance of skilled supervision and after-care of patients who have recovered, or partially recovered, from illness.

11. It would make all public hospitals free and open to everyone who would be likely to derive benefit from institutional treatment.

12. While doing this, it would insist on the treatment offered being equal to that of the best voluntary hospitals in efficiency.

13. It would endeavour to forestall the necessity for so many hospital beds by a forward social policy generally, and in particular by establishing a "national minimum," by abolishing all slums, and by undertaking a comprehensive housing scheme.

Obituary.

THE LATE DR. R. J. REECE.

A COLLEAGUE at the Ministry of Health writes as follows of the late Dr. R. J. Reece (THE LANCET, April 26th, p. 876), revealing at the same time the fine spirit of coöperation with which the official sanitary business of the country has been conducted at Whitehall :—

One is apt to forget the magnitude of the changes which have taken place in the central medical department since Reece joined the staff of the Local Government Board in 1893. There was then comparatively little outside impetus to public health measures, save when some unusual epidemic occurred or threatened. The medical staff, though distinguished and quietly influential, was a small one. At the Whitehall office you could find Sir Richard Thorne Thorne in well-earned authority as medical officer of the Board, William Henry Power, his incomparable adjutant, and Franklin Parsons, a walking encyclopædia of hygiene. There was a small body of medical inspectors, but they came there only for conferences with their chiefs, to compare notes, or, be it confessed, to gossip. Their workshops were their libraries at their own houses; and as they were strictly required, after the Hamburg cholera agitation, to reside within the four-mile cab radius they were not far apart; they knew one another more intimately at home than at the office, and to a large extent they settled between themselves the ways in which their ordinary duties were carried out. These in the main were epidemic prevention, so far as depended on the central department; vaccination administration, with all that the complicated and exact machinery that it required in the arm-to-arm period; port sanitary organisation; sanitary surveys, and like questions. In this little group Reece was a most welcome colleague. He brought us a wealth of knowledge of aspects of life we knew little of, gained from a many-sided and hard-lived existence as a student and resident at St. Bartholomew's and Cambridge, and in many non-medical regions outside. We learnt from him about emergency surgery and medicine in which he was expert, and he told us weird experiences that we had never realised could come to any house surgeon. We learnt, too, the customs of sea captains and seamen (Reece had already served his apprenticeship as a medical officer in the Port of London), the ways of the City and of A Battery of the Hon. Artillery

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[1] The Labour Movement and the Hospital Crisis, a Statement of Policy with regard to Hospitals. Published by the Trades Union Congress and the Labour Party, 32, Eccleston-square, London, S.W. 1*s*.

Company, about cycle record-breaking, bulldogs, shooting etiquette, and good ordering of a dinner, and the value of vintages to the well-conducted life. All this and much more we acquired by his own example or in the form of word-perfect stories and character sketches, centring round himself and friends, some of whom we never met in person but felt we had known from the cradle. Perhaps, to our surprise, we quickly realised how intensely and seriously Reece had taken to his official duties, how well some of them suited his temperament, and what infinite pains he rejoiced to take in order to get them done so that no conscience could smite him or no just critic could say they should have been done better. Some of us, who used to hanker after new worlds and policies, were apt to be fretted with our limitations to those corners of public health work which the Local Government Board dealt with by supervision in minute details, and thought ourselves cramped by the title of "Medical Inspector." With Reece it was otherwise: the very position of a Government inspector—they were not then as pebbles on the beach—appealed to him. No effort must be spared for any inquiry, large or small, which he undertook. When Reece started an inspection, messengers toiled with barrow loads of official files and the postman groaned over his bags. Before he went to a district, he had charged his notebook and his memory with all that was to be learnt about it, past misdeeds of administration, troubles with the town clerk or with the sanitary officers, the men to be careful with, and the allies to seek in the event of the obstacles or opposition which he always allowed for in advance and expected to meet. For each class of work, sanitary surveys, port inspections, or vaccination visits, he first made sure of office precedents and all things that headquarters might require, then added his own points, and made himself a guiding and all-embracing code. There was the instruction to give—the 30 points which must be mentioned and brought home, usually by an appropriate anecdote, to the port medical officer or public vaccinator visited, the other 20 points to be kept in his own mind for inquiry, which as tests would infallibly prove whether official requirements and departmental orders were being properly observed, or whether—greatest of crimes—an attempt was being made to throw dust in the eyes of Her Majesty's Inspector. And, while following his code, he kept always a keen eye for the real source or person responsible for things being well done, or not done as they should be. Inspections in almost all parts of the country, made in these ways, provided Reece with an acquaintance with all sorts and conditions of men, whom he fixed in his mind ever after, with their characteristics, qualities, and hobbies, and among whom many became personal friends for the rest of his life, always to be remembered and helped, or to be called upon when their aid was needed.

In all this work of inspection, and in the aftermath of correspondence and controversy which not rarely followed it, Reece had the great advantage of securing and deserving the confidence and support of his departmental chiefs and colleagues, medical and non-medical, and; above all, the guidance and wise counsel of William Henry Power, to whose lightest word or hint we all listened. Reece was an ardent admirer of the methods by which the senior epidemiologists of that period had achieved their results—by patient labour and investigation of all attainable facts, accumulation of circumstantial evidence and their logical analysis, such as Power's own work at Hendon, Pirbright, and Fulham. We had then few bacteriological short cuts and no scientific warrant to invoke the convenient healthy carrier of infection when we were in difficulties. While keeping abreast with new knowledge and in due course adding to it, Reece always closely followed the methods of circumstantial evidence in his own investigations into outbreaks of infectious diseases. No hiatus was permitted which could possibly be filled: rather than miss a date of exposure to infection he would get up before dawn and ride through a snowstorm; to verify an entry in a notification register he would work till midnight. His greatest value to his department probably lay in his dealing with epidemics which needed prompt action. When he was sent down to an outbreak, headquarters might be certain that they would not be left long without telegrams, reports, and work to do, but headquarters could also safely take for granted that the emergency was being efficiently dealt with. Reece proved this early during the Grimsby cholera outbreak of 1893, and notably during the great typhoid outbreak in Lincoln in 1904. To his fellow inspectors, Reece's return from one of these inquiries was a perpetual joy. They had to listen—and it was good for them—to the whole story, the human events, the doings and villainies of the persons concerned, and the epidemiological facts and problems to be explained, all put before them with Reece's graphic and circumstantial descriptions—well worth the cost of the many hours of subsequent work which they were sure to have to give to help with the official report, to support the righteous, or aid in confounding the unworthy.

The period which thus comes back to memory had ceased almost before Sir William Power's retirement in 1908. Much of Reece's best and larger work was to come afterwards. He had still to take his place and his share in the expansion of the central department during Sir A. Newsholme's tenure of office, and it was during this period that his well-known investigations into poliomyelitis incidence was done. He was still to justify his civil training as well as his knowledge of army matters by his handling of the organisation which dealt with epidemic cerebro-spinal fever among the troops in this country during the war, work which meant directing preventive measures from the centre on a scale rarely before attempted. He was to find later, when public medicine further extended its boundaries on the formation of the Ministry of Health, and the present medical department was organised under Sir G. Newman, an opportunity given to him, under post-war conditions, to control those very systems of port sanitary administration, small-pox prevention, and public vaccination which he had made peculiarly his own. Here he was deferred to in doctrine and practice, and aided by a devoted section of the staff to whose work and interests he gave himself sympathetically and unsparingly. But it was in the earlier years which I have ventured to recall that his principles, views, and systems of practical preventive work became formed, his habits of accurate observation and devotion to his department were developed, and his many friendships in the public health service were made. The time when he was "on the road," as he used to term it, was, I believe, the happiest period in his busy and fruitful life.

THOMAS DALTON, M.D. EDIN., M.R.C.S. ENG.

BY the sudden death from heart failure at an advanced age of Dr. T. Dalton, Llandudno, the community and surrounding district has lost a "grand old man." A member of a well-known Cumberland family, Dr. Dalton studied in Edinburgh and Paris, and graduated M.D. of Edinburgh University in 1864, obtaining his M.R.C.S. Eng. in the same year. As a young practitioner he settled in Llandudno, and in 1914 he had practised in the town for half a century. He took an active interest and promoted every good work in connexion with the social life of the town. As far back as 1885 he was chairman of the Board of Commissioners, he was chairman of the magistrates, and was also a magistrate for the county of Carnarvon. On his retirement from active work in 1914 the town took the opportunity to express its appreciation of his loyal and distinguished services by making him a presentation in the town-hall and arranging a banquet in his honour. After the outbreak of the war he became chairman of the War Relief Committee, as well as chairman of the War Tribunal and War Savings Committee, and at a later date of the local branch of the League of Nations

Union. It was entirely owing to his efforts that the Llandudno Convalescent Home for Women was founded in 1869, and from that date he faithfully served as medical officer to the home, and from 1876 as trustee. He was an active and devoted Churchman, and took a keen interest in the R.S.P.C.A. The funeral on April 22nd provided public testimony to the pre-eminent esteem in which Dr. Dalton was held by all sections of the community—" a man whose integrity of character and uprightness were above all praise."

Medical News.

UNIVERSITY OF CAMBRIDGE.—At examinations recently held the following candidates were successful :—

DIPLOMA IN HYGIENE.

Rangaswami Aiyar Adiseshan.

DIPLOMA IN PUBLIC HEALTH.

Justin W. F. Albuquerque, Marcus H. Babington, Chinglepet Balakrishna, John S. K. Boyd (distinguished in Bacteriology). Elizabeth P. Cameron (distinguished in the Application of Sanitary Science), Anil Chandra Chatterji, Isabella C. Darling, Louisa P. Gordon, Edith M. F. McGill, Des Raj Nayar, John G. Ronaldson, Jamiat Singh, Thomas S. Stirling, Vincent T. Thierens, William J. Vickers, and Thomas Young.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

Part I., Physics and Electrotechnics.—Arthur R. Colyer, George R. M. Cordiner, Frederick H. Dommissè, Charles R. Enticknap, Alexander C. Fowler, Shanazar G. Galstaun, Eric E. Holdsworth, Pratap S. Khosla, Narayan H. Kulkarni, Harold A. McCoy, Archibald C. Macrae, Frank P. Montgomery, Thomas D. Overend, Jean S. Riach, Gordon D. Thomson, Richard S. Topham, Kenneth F. Vickery, John Wall, Barbara G. Wood, and John Y. Wood.

Part II., Radiology and Electrology.—George R. M. Cordiner, Frederick H. Dommissè, Norman Grellier, Eric E. Holdsworth, Narayan H. Kulkarni, Harold A. McCoy, Archibald C. Macrae, Godfrey W. Mitchell, Frank P. Montgomery, Jean S. Riach, and John V. Sparks.

UNIVERSITY OF LONDON: *Advanced Lectures in Anatomy.*—A course of four lectures on the Development of the Human Embryo up to the Appearance of the Primitive Segments will be given at King's College, London, by Dr. T. H. Bryce, F.R.S., professor of anatomy in the University of Glasgow, at 5.30 P.M., on May 15th, 16th, 19th, and 20th. The chair will be taken by Prof. J. P. Hill, F.R.S. The lectures will be illustrated by lantern-slides and models. Admission is free, without ticket.

At recent examinations the following candidates were successful :—

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

With special knowledge of Psychiatry: Noel H. M. Burke, Roy N. Craig, Elizabeth C. Eaves, Anne Fairweather, Norman Moulson, Alexander Walk, and Isabel G. H. Wilson.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia of the College was held on April 24th, the chair being taken by the President, Sir Humphry Rolleston. The following candidates were admitted to the Membership, having passed the required examination :—

Guy W. Elkington, Alexander W. Hendry, William E. Lloyd, Enrico Moll, Annis G. H. Springthorpe, Charles E. V. Sutherland, Amelia MacDougall Thoms.

Licences to practise physic were granted to 158 candidates who had conformed to the by-laws and regulations and passed the Final Examination of the Conjoint Board. The names of the successful candidates will be given in the next issue of THE LANCET.

The following were elected to the Fellowship on the recommendation of the Council :—

Clifford S. White, Hugh T. Ashby, Eric Bellingham Smith, Rawdon A. Veale, Lancelot S. T. Burrell, Matthew J. Stewart, Richard A. Rowlands, Edgar D. Adrian, Charles P. Symonds, George C. Low, John A. Ryle, and Major Greenwood. Nominated by the Council under By-law XLI. (*b*): John C. G. Ledingham, F.R.S.

A communication from the Secretary of the Royal College of Surgeons of England dated April 11th, reporting proceedings of the Council of that College on April 10th, was received and entered on the minutes.—A letter from Dr. J. A. Hayward, asking that the Membership, which he resigned in 1898, may be restored to him, was read for the second time. This application was granted.—The quarterly report of the College Finance Committee was received and adopted.—Books and other donations to the library presented during the past quarter were received and thanks returned to the donors.—The President then dissolved the Comitia.

THE first conversazione of the Royal Society will be held at Burlington House on Wednesday, May 14th, at 8.30 P.M.

NEW INSTALLATION AT HARROGATE.—A new apparatus for nose and throat treatment has been installed at the Royal Baths, Harrogate. By its means the sulphur waters are atomised by compressed air at any desired temperature and pressure.

NAVAL MEDICAL COMPASSIONATE FUND.—At the quarterly meeting of the directors of the Fund, held on April 25th, Surgeon Vice-Admiral Joseph Chambers, Medical Director-General of the Navy, in the chair, the sum of £125 was distributed among the several applicants.

ROYAL SANITARY INSTITUTE.—A sessional meeting of the Institute will be held on Friday, May 9th, in the Town Hall, Tunbridge Wells, at 5 P.M., when discussions will take place on Child Welfare Work, Retrospective and Prospective, to be opened by Dr. F. C. Linton, and on Tunbridge Wells Undertakings; Water-Bearing Strata in and Around Tunbridge Wells; Rainfall and Drought of 1921, by Mr. W. H. Maxwell, A.M.Inst.C.E. The chair will be taken by Dr. Louis C. Parkes.

SLEEPY SICKNESS IN SHEFFIELD AND MANCHESTER.—In Sheffield cases of encephalitis lethargica are on the increase, and in a recent week 41 new cases and 7 deaths were notified, compared with 37 cases and 3 deaths in the previous week, bringing the total since March 10th to 127 notifications and 16 deaths. In Manchester, since the beginning of January, there were 180 cases and 27 deaths. Only five cases were reported last week, and a similar number the previous week. In Manchester 1071 fresh cases of measles were reported last week, an increase of 100 on the previous week. At the corresponding period last year the number was 111.

MANCHESTER HOSPITALS.—The coming inquiry by the Voluntary Hospital Commission into the shortage of hospital accommodation is of great interest to the Manchester and Salford community, as these two areas together are the largest hospital centre in the country outside the Metropolis. Even with the best efforts and utmost good-will to extend the number of hospital beds, it is computed that during the last 20 years there has been no increase in beds comparable to the increase of the population. In the district there are 2444 voluntary hospital beds, and it is stated that there are nearly two cases waiting for each one of these beds. Financial difficulties alone delay the contemplated additions. In 1922 the ordinary income of the several hospitals was £290,000 and the expenditure £350,000, leaving a deficit of £60,000—i.e., more than £1000 every week to be met by special grants. According to the local secretary of the Hospital Sunday Fund, the contributions by the middle classes are reasonably good. The working classes fail, probably because there is no efficient organisation for collecting from them. In Manchester and Salford the amount collected from the wage-earning classes is but one-fifth of the sum contributed in Glasgow, and only one-half of what is collected in Birmingham, Leeds, and Newcastle-on-Tyne, and considerably less than the working class contribute in Leicester—a town with a population only about a quarter of that of Manchester.

SOCIETY OF M.O.H.'S: *Maternity and Child Welfare Group.*—The annual meeting of this group of the Society will be held at Caxton Hall, Westminster, S.W. 1, on July 3rd, at 5 P.M. The subject for discussion is the Treatment of Babies Suffering from Malnutrition and the Results obtained by Ward Provision, whether Municipal or Voluntary, for such Babies. The discussion will be opened by Prof. E. Mellanby, who will speak from his experience at the Royal Infirmary, Sheffield. Dr. Donald Paterson, of the Infants Hospital, London, will follow. Dr. Janet Campbell, of the Ministry of Health, hopes to be present. In the subsequent discussion it is hoped to hear the experience of the medical officers of babies' hospitals and wards throughout the country.

Fever Hospitals Medical Service Group.—A meeting of this group was held on April 25th, at the City Hospital, Newcastle-upon-Tyne, Dr. E. W. Goodall presiding. After a tour of the hospital, conducted by Dr. H. Kerr, papers were read by Dr. T. N. V. Potts and by Mr. Neil Maclay on Three Years' Specialist Oto-Rhinological Treatment in Scarlet Fever—a Survey and Demonstration. Several illustrative cases were shown. In the discussion which followed the subject of the treatment of conditions of otitis following infectious diseases was dealt with by Mr. W. T. Gardiner and Mr. J. K. Love, from the point of view of the aural surgeon, and by the President, Dr. C. B. Ker, Dr. F. H. Thomson, and Dr. D. S. Sutherland, from the point of view of the fever hospital administrator. Dr. Ker, the medical superintendent of the City Hospital, Edinburgh, was elected President of the group for the year 1924–25.

Harveian Society of London.—A clinical meeting will be held at the Paddington Infirmary, 285, Harrow-road, W., on Thursday, May 8th, at 4.30 p.m.

Federation of Medical and Allied Services.—The annual dinner of the Federation will take place at the Langham Hotel, Portland-place, London, W. 1, on May 30th. Sir Berkeley Moynihan, the President, will take the chair and a number of distinguished guests are expected. Individual members of the Federation and members of coöperating bodies are invited to make early application to the Secretary, at 12, Stratford-place, for any tickets they may require for themselves and guests, either ladies or gentlemen. The price of the tickets is 12*s.* 6*d.*

British Society for the Study of Orthodontics.—The Society offers certain prizes, to be awarded triennially, for competitive essays. The first award will be for the three years ending Dec. 31st, 1926, for which the prizes are as follows: (1) A medal executed in silver and an honorarium of 50 guineas; (2) an honorarium of 20 guineas; (3) an honorarium of 10 guineas. The subject for the essays to be submitted in competition for this award is: The Macroscopic Changes which Normally Occur in the Jaws and Teeth of Man and in their Mutual Relations, from Birth to the Complete Eruption of the Second Permanent Molars. The prizes are open to competitors of all nationalities. Full particulars will be sent on application to the hon. secretary, 11, Chandos-street, London, W. 1.

International Society of Public Health Officers.—As a result of the recent interchange of public health officers under League of Nations auspices the decision has been made to set up an international society open to all medical officers of health who are taking part in the various interchanges organised by the League. A provisional committee, composed of members from Great Britain, Russia, France, Germany, Poland, Italy, and Ecuador has been elected to draw up the constitution. The society will have its headquarters at Geneva, and all public health officers who have already taken part in League interchanges—namely, 240 from 43 different countries—will be invited to become original members. The new society will have as its principal object the development of the League's Health Organisation. Its members will exchange information on all matters of public health.

International Conference on Industrial Hygiene.—The Swiss Organising Committee of Health Experts for the first international meeting for the study of problems of industrial hygiene has supplied the following names of those who are taking part in the Conference:—Industrial lighting and eyestrain: Mr. Gaster (London), technical report; Mr. Oblath (Trieste), general physiopathology; and Dr. Stassen (Liege), lighting in mines and miners' eyestrain. Vitiated atmosphere in workshops: Prof. L. Hill (London), ventilation (katathermometer); Mr. Kohn-Abrest (Paris), dust and smoke; and Prof. Lehmann (Wurzburg), gases. Value of fatigue tests: Mr. F. Lee (New York), chemical methods, general criticism of fatigue tests; Prof. M. Patrizi (Bologna), mechanical and graphical methods; and Mr. Wyatt (London), psychological methods. The Committee hope to be able to distribute the reports before the meeting (July 18th to 20th, 1924). Requests for information should be addressed to Prof. Cristiani, Institut d'Hygiene, University of Geneva, Switzerland.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 19TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week, namely: Small-pox, 93; scarlet fever, 1316; diphtheria, 537; enteric fever, 49; pneumonia, 1607; puerperal fever, 40; cerebro-spinal fever, 11; acute poliomyelitis, 1; encephalitis lethargica, 253; dysentery, 3; ophthalmia neonatorum, 119. No cases of cholera, plague, or typhus fever were notified. The cases of encephalitis lethargica, 47 more than in the previous week, were notified in the following counties: London 33, Chester 5, Derby 6, Durham 5, Essex 6, Gloucester 14, Lancaster 26, Middlesex 4, Northumberland 19, Nottingham 7, Stafford 4, Surrey 7, Warwick 33, Yorks W.R. 55; and elsewhere in smaller number.

Deaths.—In the aggregate of great towns, the deaths from influenza fell from 316 to 282. In London the deaths from diphtheria rose to 15, and those from measles, which had been 66 in the preceding week, fell to 57 last week. The deaths from influenza in London rose to 45 last week.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Budget.

On Tuesday, April 29th, Parliament reassembled after the Easter recess, and Mr. **Snowden**, the first Labour Chancellor of the Exchequer, introduced the Budget in the House of Commons. It imposes no new taxes and makes no additions to existing taxes. He said that since December, 1919, the total reduction in the National Debt, external and internal, had been over £650,000,000. As a net result since that date we had reduced our annual interest charge by £40,000,000 and laid the foundation of an improvement in credit which it was hoped would still further reduce the debt burden in the future. He felt able to be optimistic as regards the future. Unemployment was steadily decreasing. So long as the Labour Government remained in office they did not intend to ask Parliament to abolish the Imperial preferences now accorded, but they would reserve full liberty to propose the reduction or abolition of duties on the commodities to which the existing preferences applied. He had agreed with the Postmaster-General that he should make in the near future certain postal concessions at an approximate cost of £500,000 in the current year and £1,000,000 a year thereafter.

The sugar duty would be reduced from 2¾*d.* to 1¾*d.* per lb. This would cost £17,700,000 this year. The tea duty would be reduced from 8*d.* to 4*d.* per lb. The correlated duties on cocoa, coffee, and chicory would also be reduced by one-half. The increase on the dried fruit duty of 50 per cent., which was introduced in the Second Budget of 1915, would not be renewed. He proposed to abolish the duty on sweetened table waters. The duties on imported manufactured articles, commonly known as the McKenna duties, would be abolished from August 1st next. Relief would be accorded in respect of entertainment duty by abolishing the tax on payments for admission up to and including 6*d.* and by reducing the tax on payments over that amount up to and including 1*s.* 3*d.* Methylated spirits would be required to contain an additional denaturant crude pyridine to render them more nauseous and more difficult to swallow. Inhabited house duty and the Corporation Profits duty would be abolished.

The Chancellor of the Exchequer concluded by saying that he was left with an estimated surplus in hand of £4,024,000 which he felt bound to keep, more particularly as he had made no provision for any supplementary expenditure beyond that included in the original estimates of the year.

HOUSE OF COMMONS.

Tuesday, April 29th.

Final Pensions Awards.

Mr. D. G. **Somerville** asked the Minister of Pensions whether in his recent proposals for revision of the pension regulations he proposed to consider the cases of ex-Service men to whom final awards had been granted, but whose maladies in respect of such pensions had now become seriously worse; and whether he was aware that there were a very large number of such cases in which the ex-Service men concerned were receiving no assistance whatever from the State.—Mr. J. W. **Muir** replied: Cases of the kind referred to are eligible for, and in fact receive, medical treatment from the Ministry, together (if necessary) with allowances. If, as the result of treatment, it should be ascertained that the award previously made was erroneously declared final, the case is dealt with by way of amendment of the award in the manner indicated in my reply on March 27th (see The Lancet, April 5th, p. 731).

Nursing Service in Mental Hospitals.

Mr. **Hore-Belisha** asked the Minister of Health if the departmental committee appointed to consider the nursing service in county and borough mental hospitals, and in what directions it could be improved, had yet come to any conclusions and, if so, of what nature; and, if the committee had not yet reported, when it might be expected to do so.—Mr. **Greenwood** replied: This committee has practically finished its work, and I understand it hopes to report very shortly.

Foreign Decoration.—The King has granted to Dr. Reginald Gower Kirton, late Principal Medical Officer to the Egyptian Prisons Department, permission to wear the Insignia of the Third Class of the Order of Ismail, which has been conferred upon him by the King of Egypt in recognition of valuable services rendered.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETING OF SECTIONS.

Monday, May 5th.

TROPICAL DISEASES AND PARASITOLOGY: at 8.30 P.M. (In the Laboratory of the Royal Army Medical College, Grosvenor-road, S.W.)

Annual General Meeting:

Election of Officers and Council for 1924–25.

Demonstrations:

Lieut.-Colonel J. A. Anderson: (1) Types of Improvised Sanitary Appliances for Tropical Use. (2) Measurement of Heat and Sunlight in Environment.

Dr. Broughton-Alcock: (1) A Vibriothrix Simulating *Vibrio choleræ* in the Fæces. (2) Renal Abscess Demonstrating a Mycelium Occurring in a *B. coli* Infection of the Urinary Tract.

Dr. J. B. Christopherson: (1) Series of Photographs Illustrating the Distribution, Bionomics, and Clinical Features of *Schistosoma japonicum* in Japan. (From Dr. Akira Fujinami.) (2) Cercariæ in Liver of Intermediate Host of *Schistosoma japonicum*. (From Dr. Nakamoto.) (3) Section Demonstrating Male and Female Worms in Vein and Deposition of Ova from a Case of Egyptian Intestinal Schistosomiasis. (From Major W. R. O'Farrell.)

Prof. L. S. Dudgeon: Slides and Drawings Illustrating Certain Points in the Pathology of Appendicitis.

Lieut.-Colonel W. P. MacArthur: Sections of Human Liver Infected with *Hepaticola hepatica*. (Bancroft.)

Mr. J. Ramsbottom: (1) Orchid *Mycorrhiza*. (2) Demonstration of Some Points in the Life History of Yeasts.

Dr. J. Gordon Thomson: (1) A Series of Photographs Illustrating Houses in Rhodesia in which Blackwater Fever has Occurred. (2) Films Demonstrating *P. falciparum* in Blackwater Fever Cases.

Other demonstrations will be given.

Tuesday, May 6th.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)

Annual General Meeting:

Election of Officers and Council for 1924–25.

Cases and Specimens:

Mr. Tyrrell Gray: Case of Chronic Infective Polyarthritis in a Girl.

Mr. Muirhead Little: X Rays of a Case of Paget's Disease.

Other cases will be shown.

Wednesday, May 7th.

SURGERY: at 5.30 P.M.

Annual General Meeting:

Election of Officers and Council for 1924–25.

Communication:

Mr. W. B. Gabriel: End-results of Fracture of the Patella Treated by Various Methods.

Thursday, May 8th.

NEUROLOGY: at 5 P.M.

Pathological Meeting to be followed by the Annual General Meeting for election of Officers and Council for 1924–25.

Friday, May 9th.

CLINICAL: at 5.30 P.M.

Annual General Meeting:

Election of Officers and Council for 1924–25.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.

MONDAY, May 5th.—8 P.M., General Meeting and Reception. 9 P.M., Mr. Wilfred Trotter: On Certain Minor Injuries of the Brain.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, London, W.C. 2.

MONDAY, May 5th.—8 P.M., Extra Meeting. Mr. T. Thorne Baker: Photography in Industry, Science, and Medicine.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

MONDAY, May 5th.—5 P.M., Prof. Karl F. Wenckebach (Vienna): Angina Pectoris and the Possibilities of its Surgical Relief.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 5th to SATURDAY, May 10th.—CENTRAL LONDON OPHTHALMIC HOSPITAL. Mon., 2 P.M., Mr. Oliver: Conjunctivitis Excluding Trachoma. Tues., 2.30 P.M., Mr. Gibb: Trachoma. 4.30 P.M., Mr. Williamson-Noble: New Growths of the Eye. Pathology. Wed., 2.30 P.M., Mr. Levy: The Lenses of Spectacles. Thurs., 2.30 P.M., Mr. Cunningham: Corneal Ulcers.—HAMPSTEAD GENERAL HOSPITAL, in conjunction with the North-Western Fever Hospital and Paddington Green Children's Hospital. Special Intensive Course.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars. Clinical instruction in the Outpatient Department every afternoon from 2.30 P.M. Tuesday and Friday, Venereal Clinic from 5.30 P.M. to 7 P.M.—LONDON LOCK HOSPITALS. Clinical work daily. Lectures at Dean-street as follows: Mon., 5 P.M., Mr. Gibbs: Anterior and Posterior Urethritis. Tues., 2.30 P.M., Mr. McDonagh: Treatment of Gonorrhœa and its Complications. Thurs., 4.30 P.M., Mr. Lawrence Abel: Treatment of Acute Gonorrhœa in the Male. Fri., 4 P.M., Mr. Johnston Abraham: Treatment of Gonorrhœa in the Female.—MAUDSLEY HOSPITAL. Mon., 3.30 P.M., and 5.30 P.M., Dr. Bernard Hart: The Psychoneuroses. Tues., 2.30 P.M., Dr. Shrubsall: The Practical Aspect of Mental Deficiency. 4.30 P.M., Sir Frederick Mott: The Pathology of Mental Diseases. Wed., 2.30 P.M., Dr. Mapother: Demonstration in Clinical Psychiatry. Thurs., 4.30 P.M., Dr. Sullivan: Crime and Insanity.

UNIVERSITY OF LONDON, SOUTH KENSINGTON, W.

Lectures and Demonstrations on Medical Hydrology.

TUESDAY, May 6th.—10 A.M., Dr. R. Fortescue Fox: Introductory Lecture. 11.30 A.M., Prof. M. S. Pembrey: The Regulation of Temperature in Health and Disease. 2 P.M., Dr. S. Judd Lewis: The Chemical and Physical Investigation of Waters.

WEDNESDAY.—10 A.M., Dr. R. Fortescue Fox: The Actions and Uses of Baths. 11.30 A.M., Dr. David Brown: The Pharmacology of Natural Medicinal Waters. 2 P.M., Dr. Charles W. Buckley: The British Spas, their Waters and Methods of Treatment (at the Rooms of the Medical Society, Chandos-street, W.). Free lecture to all medical men.

THURSDAY.—9.45 A.M., Dr. G. L. Kerr Pringle: Spa Treatment of the Rheumatic Group of Diseases. 11 A.M., Dr. W. Bertram Watson: The Treatment of some Common Skin Diseases by Baths and Waters.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, May 5th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Fractures and Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 4.15 P.M., Dr. Ackerley: British Spas and Spa Treatment.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr Pernet: Skin Dept.

THURSDAY.—11 A.M., Mr. Simson: Gynæcological Demonstration. 4.15 P.M., Dr. Ackerley: British Spas and Spa Treatment.

FRIDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 11 A.M., Dr. McDougal: Electrical Dept. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE. (Prince of Wales's General Hospital.)

(At 4.30 P.M.)

MONDAY, May 5th.—Dr. J. Browning Alexander: Thoracic Pain.

TUESDAY.—Dr. F. G. Crookshank: The Management of Diabetes.

THURSDAY.—Dr. A. J. Whiting: Heart Block and Alternation.

FRIDAY.—Mr. E. Gillespie: The Recognition and Treatment of Septic Infection of the Hand.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

THURSDAY, May 8th.—5 P.M., Mr. Richard Lake: Examination of Case (Geoffrey E. Duveen Lectures in Otology).

CHARING CROSS HOSPITAL MEDICAL SCHOOL. (University of London Advanced Lecture in Ophthalmology.)

FRIDAY, May 9th.—5 P.M., Dr. J. Van der Hoeve, Professor of Ophthalmology, Leiden: Accommodation.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.

THURSDAY, May 8th.—5 P.M., Mr. Phillips: Childbearing and Heart Disease.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.

TUESDAY, May 6th.—5 P.M., Dr. Whitfield: Principles of Local Treatment.

THURSDAY.—5 P.M., Dr. Knowsley Sibley: Alopecia.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (3.30 P.M.)

MONDAY, May 5th.—(At the Children's Hospital.)

TUESDAY.—(At the Southern Hospital.) Dr. N. B. Capon: Kidney Disease in Children.

WEDNESDAY.—(At the Northern Hospital). Dr. Murray Bligh: Diagnosis and Treatment of Chorea.

THURSDAY.—(At the Stanley Hospital.)

FRIDAY.—(At the Royal Infirmary.) Mr. Guthrie: Foreign Bodies in the Air and Food Passages.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

TUESDAY, May 6th.—4.15 P.M., Dr. W. B. Anderton: Some Sudden and Unexpected Deaths.

BRISTOL UNIVERSITY POST-GRADUATE DEMONSTRATIONS.

WEDNESDAY, May 7th.—3.30 P.M. (at the Hereford General Hospital), Dr. Carey Coombs: Treatment of Rheumatic Carditis in Children.

Appointments.

DYSON, DOROTHY M. L., M.B., Ch.B. Vict. has been appointed an Anæsthetist to the St. Mary's Hospitals, Manchester.

HOOD, W. D., M.B., Ch.B. Glasg., 3rd Assistant Medical Officer, Baguley Sanatorium.

MORISON, D. M., M.B., Ch.B. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Portree District of the County of Inverness.

TRAQUAIR, H. M., F.R.C.S. Edin., Ophthalmologist to Chalmer's Hospital, Edinburgh.

Paddington Green Children's Hospital: WILLIAMSON, B., M.B., Ch.B. Edin. (House Physician); MORRISON, R. G., M.R.C.S., L.R.C.P. Lond. (House Surgeon).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Asst. Med. Electrician.

Belfast, Queen's University.—Lectureship in Anatomy.

Birkenhead Borough Hospital.—Third H.S. £100.

Birmingham, Yardley-road Sanatorium &c.—Asst. R.M.O. £450.

Bradford Children's Hospital.—H.S. £100.

Cardiff Royal Infirmary.—Two Hon. Asst. Gynæcologists.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Reg.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. £125.

Coulsdon, Surrey, Netherne Mental Hospital.—Third Asst. M.O. £400 to £500.

East Sussex County Mental Hospital, Hellingly.—Pathologist. £500. Also Jun. Asst. M.O. £350.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., Obstetric Asst., and Two H.S.'s. Each £50.

Essex Administrative County.—Asst. County M.O.H. £700.

Grimsby County Borough.—Ven. Dis. M.O. £750.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Radiologist. £100.

Hertford County Sanatorium, Ware Park, nr. Ware.—A.M.O. £350.

Hôpital Français, 172, Shaftesbury-avenue, W.C.—Sen. and Jun. R.M.O.'s. £120 and £100 respectively.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Asst. Radiologist. £50.

Inverness, Northern Infirmary.—Jun. Medical Resident. £100.

Isle of Wight Union, Newport.—M.O. and Pub. Vacc. £150.

London County Council Education Officers' Dept.—Woman Organiser of Physical Education. £696.

London Jewish Hospital, Stepney Green, E.—R.M.O. £150. Also Jun. R.M.O. £100.

London Lock Hospital, Dean-street and Harrow-road.—Surg. Reg. £100.

Loughborough and District General Hospital and Dispensary, 9, Leicester-road.—Res. H.S. £175.

Middleton-in-Wharfedale Sanatorium.—Asst. M.O. £500.

North Middlesex Hospital, Edmonton, N.—Part-time S. for Throat Dept. £3 3s. per session.

Pietermaritzburg, S. Africa, Grey's Hospital.—H.S. £400.

Preston, Fulwood Institution.—R.M.O. £400.

Rangoon Corporation.—Health Officer. Rs.1200/- per month.

Rochester, St. Bartholomew's Hospital.—R.H.S. £250.

Royal Dental Hospital, 32, Leicester-square, W.C.—Hon. Radiologist.

Royal Northern Hospital, Holloway, N.—Joint H.P. and H.S. £75. Also Cas. O. £125.

St. Bartholomew's Hospital.—P.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £175. Asst. R.M.O. £130.

Salford Ladywell Sanatorium.—Sen. R.M.O. £600.

Sheffield Royal Hospital.—Cas. O. £150.

Union of South Africa Government Mental Hospital Service.—A.P.'s. £460.

Whitelands Training College, Chelsea, S.W.—M.O.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Patrington, Yorks (E. Riding); Abersychan, Monmouth; Kemnay, Aberdeen; Lostwithiel, Cornwall; Fordoun, Kincardineshire.

The Secretary of State for the Home Department gives notice that, in consequence of the resignation of Mr. A. E. Maylard, one of the Medical Referees under the Workmen's Compensation Act, 1906, a fresh appointment will have to be made for the County of Lanark. Applications for the post should be addressed to the Private Secretary, Scottish Office, and should reach him not later than May 17th.

Births, Marriages, and Deaths.

BIRTHS.

CRISP.—On April 24th, at Heveningham, Suffolk, the wife of Lieut.-Colonel G. B. Crisp, R.A.M.C. (retd.), of a son.

FITZMAURICE-KELLY.—On April 15th, at Brunswick-square, Hove, the wife of M. Fitzmaurice-Kelly, F.R.C.S., of a daughter.

WATKINSON.—On April 17th, at Dartmouth, the wife of Dr. A. A. Watkinson, of a son.

MARRIAGES.

CRAN—COCHRANE.—On April 23rd, at Holy Trinity Church, Sloane-street, W., Disney Cran, M.D., F.R.C.P. Edin., to Peggy, only child of Mr. and Mrs. T. A. Cochrane, of Ladbroke-grove, W.

GLADSTONE—BOWER.—On April 24th, at St. Lawrence's Church, Middleton St. George, Frederick Charles Gladstone, M.A., M.D., to Winifred Rosamond, elder daughter of Mr. and Mrs. W. A. Bower, of Middleton St. George, Co. Durham.

HUGHES—NYE.—On April 26th, at St. Anne's Catholic Church, Vauxhall, Richard Lawlor Hughes, M.R.C.P., to Lilian Mary, youngest daughter of the late F. W. Nye, Esq., of Bromley, Kent.

MILNE—TOD.—On April 22nd, at Holy Trinity Church, Stirling, Captain Herbert Stewart Milne, M.C., R.A.M.C., youngest son of the late Dr. and Mrs. Thomas Milne, Aberdeen, to Alice Christian, eldest daughter of Mr. and Mrs. Frederick Tod, of Snowdon-place, Stirling.

MONTAGUE-WHITE—ROWLAND.—On March 29th, 1924, at St. Stephens, West Coast, Demerara, by the Rev. Salmon, Alan Douglas Macleod Montague-White, of the British Guiana Police Force, youngest son of Montague Montague-White, Esq., of Invernesshire, Scotland, and Southsea, Hants, to Nathalie Blanche, daughter of Ernest D. Rowland, M.B., C.M. Edin., I.S.O., J.P., and Mrs. Rowland.

PROCTER—MORLEY.—On April 24th, at St. Barnabas's Church, Heaton, Bradford, Robert Arthur Welsford Procter, M.C., M.A., M.B., Ch.B. Camb., to Kathleen Mary, eldest daughter of Mr. and Mrs. H. W. Morley, of Park-drive, Bradford.

TAUNTON—MASTERTON.—On April 22nd, at St. Mary's, Dover, Richard Eustace Maxwell Taunton, M.B., Ch.B., to Dorothy, younger daughter of W. N. Masterton, R.N.R.

DEATHS.

BERRIDGE.—On April 22nd, 1924, William Alfred Berridge, M.R.C.S., of 7, Radnor Park West, Folkestone, formerly of Oakfield, Redhill, Surrey, aged 70 years.

BULL.—On April 19th, at a nursing home, following an operation Harry Ashworth Bull, M.R.C.S., L.R.C.P., of Great Haywood, Staffs., aged 52.

RAYNER.—On April 26th, suddenly, from heart failure, Hugh Rayner, late Surgeon Lieut.-Colonel Royal Horse Guards and 3rd Batt. Grenadier Guards, of Upper Montagu-street, W., in his 64th year.

WHITE.—On April 20th, at Framingham Earl, near Norwich, Richard Wentworth White, M.R.C.S., L.D.S., aged 76 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

MANAGER'S NOTICES.

THE Manager of THE LANCET would like to purchase copies of the issue of Feb. 2nd, 1924, for which subscribers may have no further use. He will be pleased to pay 1*s*. each for them. Such copies should be addressed to him at 423, Strand, London, W.C. 2.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1*s*. per copy, plus postage. Cheques and P.O.'s (crossed "Westminster Bank, Ltd., Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C. 2.

SMALL ADVERTISEMENT RATES.

Books and Publications	Four Lines and under 6*s*. 0*d*.
Official and General Announcements ..	
Trade and Miscellaneous Advertisements	

Every additional line 1*s*. 6*d*.

DONATIONS AND BEQUESTS.—The late Mrs. Jane Kay Hampson, of Knightsbridge, left by will, among other bequests, £1000 to the Hospital for Incurables, Mauldeth, Heaton Mersey, Manchester; £1000 to the Cancer Hospital, Fulham; £500 to the London Hospital; £500 to the National Institute for the Blind, Great Portland-street, London; and £500 to St. George's Hospital. Part of the residue will be divided between the National Institute for the Blind, the London Hospital, and St. George's Hospital.—The St. Mary's Hospitals, Manchester, have received the following legacies: £1500 from the executors of the late Mrs. Elizabeth Shufflebotham, £1946 from the executors of the late Anna Matilda Swain, £250 from the executors of the late John Greaves.—Mr. John George Litton, of Heaton Chapel, Stockport, and Manchester, has left £28,770 by will. Besides numerous small legacies he left the residue of the property for hospitals and institutions for the relief and care of the sick in Manchester and Stockport, to be selected by the executors.

Notes, Comments, and Abstracts.

COLONIAL HEALTH REPORTS.

JAMAICA.

THE estimated population at the close of 1922 was 885,692. The birth-rate for the year was 37·3 and the death-rate 22·9 per 1000. The total infantile death-rate under 1 year was 17·7 per 1000. The principal causes of death among the inhabitants of Kingston, the capital, were: Diarrhœa and enteritis, 6·7; atrophy, icterus, and scleroma of the new-born, 10·9; phthisis, 10·8; enteric fever, 7·0; pneumonia, 5·3; heart disease, 6·2; chronic Bright's disease, 4·3; cerebral hæmorrhage, apoplexy, 4·4. Matters in connexion with the health and sanitation of the island continue to receive the earnest attention of the Government. The International Health Board of the Rockefeller Foundation are actively engaged in the treatment of hookworm in the parish of St. Catherine, and it is proposed to extend operations to other parishes. During the year the chief sanitary medical officer assumed duty, and it is anticipated that an efficient sanitary staff will be organised to cope with public health conditions requiring betterment. The recrudescence of alastrim (Kaffir pox) still existed during 1922, but the mortality was abnormally low, and vaccination has proved to be a very substantial protective measure. The average rainfall for the year was 52·38 inches, which was considerably below the average for the past 50 years (76·46 inches). In Kingston the mean temperature for the 12 months was 78·7° F., the highest maximum was 93·5° in July and the lowest 64·6° in January.

FALKLAND ISLANDS.

The estimated population on Dec. 31st, 1922, was 1205 males and 937 females, total 2142. There were 55 births (30 males and 25 females) during the year, and 15 deaths (6 males and 9 females). The health of the colony was good, there being no sickness of a serious character recorded. The rainfall for the year was low. Continuous dry weather was experienced for 54 days in the months of November and December. The largest number of days on which rain fell in one month was in September. The highest temperature recorded was in December, when 69° was reached. Constant strong winds prevail during October, November, and December, rising at daybreak and falling towards evening. Severe storms are of less frequent occurrence and intensity than in the United Kingdom. The average temperature in West Falkland is higher than in the East Island. This is thought to be due to the presence of a warm current which exists in the vicinity. There is little doubt (it is remarked in the annual report) that the climate on the whole is one of the most salubrious in the world. There are neither endemic nor epidemic diseases. It has been frequently stated that there is some danger in the alleged rigour of the climate for persons predisposed to pulmonary affections, but no support can be found for the theory, and medical officers stationed in the colony have given it as their opinion that the Falklands can be recommended as a health resort for such persons. The dependencies of the colony consist of several groups of islands, comprising a total area of land and sea of more than 3,000,000 square miles. South Georgia, the principal island in these dependencies, lies in latitude 54½° S. and longitude 36° to 38° W.; it has an area of about 1000 square miles, and is a mass of high mountains covered with snow, while the valleys between are filled with glaciers which in many cases descend to the sea. The coastal region is free from snow in summer and more or less clothed with vegetation. During 1922 rain fell on 121 days, and observations show that snow falls on an average on 124 days in the year and hail on 43. South Georgia is the only part of the dependencies which is permanently habitable. It has a fluctuating population of over 1000. Five land stations have been established there by whaling companies.

THE VARIVANE SUPPORTS.

WE have received from the Varivane Co., 56, Borough High-street, London Bridge, S.E. 1, samples of the forms of support which they make for the subjects of varicose veins, phlebitis, and conditions described as synovitis, and "loose cartilage." The samples sent include a support for the calf and ankle combined, and separate supports for calf and ankle, a support for the thigh and knee, and separate supports for the knee. The appliances are all made of canvas stiffened at the lace eyelets, the object of the inventors being to produce an efficient substitute for elastic stockings. The even pressure of elastic stockings cannot, we think, ever be obtained by any other appliances, but, as both doctors and their patients know well, the life of an elastic stocking is limited by the period of its elasticity, and when the vital property is lost in one place the whole stocking tends to become useless. The material of which the Varivane supports are made is durable, and if the appliance has been properly fitted in the first place, we can understand that it should last a very long time with a considerable saving of money in comparison with the expense of using elastic devices. The stockings and other supports are easy to put on and take off, can be washed, and can be readily repaired.

BOLOGNA MEDICO-CHIRURGICAL SOCIETY.

WE have received from this Society an announcement in Latin of the festivities in celebration of the coming centenary of the Society in June. The text runs: If those who wish to be present, and cannot, will signify by letter to Prof. Dagnini their goodwill and approval, such expressions will give great gratification. And that the authorities may in return display some mark of appreciation, they will forward to the signatories a copy of the commentaries of the Society, which will be issued shortly.

MEDICAL LITERATURE FOR MISSIONARY DOCTORS.

To the Editor of THE LANCET.

SIR,—May I through your columns make known the need of medical literature by members of the medical profession who work in hospitals scattered over the world? Copies of THE LANCET or other medical papers would be greatly valued when finished with. I will gladly supply addresses to which such literature may be sent: it should not be addressed to me.—I am, Sir, yours faithfully.

B. GAMBIER PARRY,
S.P.G. Secretary for Medical Literature.

Westhaven, Leckhampton, Cheltenham, April 24th, 1924.

REGISTRATION OF MEDICAL STUDENTS.

AT a recent meeting of the Senate of the University of London it was resolved that the following paragraph be substituted for the second footnote on p. 1 of the Regulations for Matriculation, and that it be inserted in the Regulations in Medicine (Red Book, 1923–24, p. 219): "The Medical and Surgical Degrees of this University are registrable qualifications to practise, and, *though desirable*, it is not necessary that students should register as Medical Students in order to qualify themselves to enter for the examinations for these Degrees. For the Diplomas of certain other Licensing Bodies, however, registration as a Medical Student by the General Medical Council is a necessary preliminary, and students should obtain particulars from the Registrar to the General Medical Council, 44, Hallam-street, Portland-place, W. 1." The italics are ours, and indicate the words which mark the difference in the sense of this paragraph from footnote 2 to the Regulations for Matriculation set out as an appendix to the University of London Calendar, 1923–24.

PROFESSIONAL AND BUSINESS WOMEN'S HOSPITAL LEAGUE.

AT the annual meeting held at 29, Grosvenor-place recently, Miss Corry presiding, it was stated that the total membership on Dec. 31st last was 1649 benefit members, and about 250 hon. members, against 996 benefit members, and about 200 hon. members on Dec. 31st, 1922; 776 new ordinary members have been enrolled during 1923. The League was founded in 1913 to make provision in severe sickness for women who earn their living in professional and business callings. The ordinary benefits available are: (1) Four weeks' treatment in a hospital specified by the committee, either in London or in the provinces; (2) free consultation with a gynæcologist, should such a step be necessary; (3) a reduction of cost on surgical appliances. Certain cases, which do not fall into the above classes, are given special grants on a doctor's certificate. The age limit for benefit members on joining was discussed, and this was fixed at 55. Eighty-six claims were received during the year, of which 49 were met by hospital treatment, consultation, or money grants. Of the rest, 9 cases were ineligible for benefit, 15 were withdrawn, and 13 were refused.

Erratum.—In Sir William Collins's note last week on Chadwick's Later Work he is made to say: "Many of his [Chadwick's] addresses and essays were in *English*, which he wrote with ease." The italicised word should, of course, have been *French*, and we regret the printer's slip none the less that it can have misled no one.

"A SAFE LITTLE HEATING LAMP."—Messrs. Ahlmann, Ltd., inform us that the price of "Meta" N.P. Candle with wood base, No. 20, on which we commented favourably (THE LANCET, April 19th, p. 834), is 4*s.* 6*d.* This implement has been specially constructed for sterilising small surgical and medical instruments, and also for heating the contents of test-tubes.

Annual Oration

ON

CERTAIN MINOR INJURIES OF THE BRAIN.

Delivered before the Medical Society of London on May 5th, 1924,

BY WILFRED TROTTER, M.S. LOND.,
F.R.C.S. ENG.,
SURGEON AND HOLME LECTURER IN CLINICAL SURGERY, UNIVERSITY COLLEGE HOSPITAL, LONDON.

THE choice of this subject has been guided by two considerations. In the first place, the unity of structure which is so characteristic a feature of our Society, seemed to point towards some topic of which the interest is not limited to any special department of medicine. In the second place, the occasion appeared to be one, if I rightly interpret its tradition, in which a very close restriction to technical matters need not be insisted on; while if the subject chosen developed naturally towards regions outside the strictly medical field, some glance into such wider sources of interest might be, in the circumstances, legitimate.

INTRODUCTORY.

It will, I think, be admitted that the subject of head injuries is of practical interest and importance to the great majority of us, whether our work lies exclusively or chiefly in a special department of medicine, or is distributed over all. It is, however, only to a very much limited part of this large subject that I propose to invoke your attention. My primary object will be not the gross and at the same time relatively definite conditions that we meet with in immediate consequence of obviously formidable accidents, but the conditions at first sight relatively indefinite, and not obviously serious, which occur as late results or sequels to head injuries of all grades of severity. It will be convenient at once to define our subject yet more exactly. We are to consider a group of phenomena, including headache, giddiness, and other less definable sensations in the head, defects of memory, concentration and attention, alterations of disposition and mood, and certain kinds of mental deterioration. This group of phenomena is to interest us when arising after and in obvious consequence to a head injury. It will not be necessary to deal with each member of the group, as the single one of headache can be selected as the most characteristic and as fully representative of the others. What can be said of headache, the commonest of them, can be said with all reasonable probability of most, if not all, of the others. We have now pruned down our subject until it is adequately represented by that of headache as a sequel of head injury. There remains, however, one further stage of definition to be accomplished. Headache, and others of the associated group of symptoms, is common as a sequel to head injuries of all grades of severity, and bears no obvious relation to the amount of gross destructive damage that has been inflicted. In considering its significance here, therefore, it will simplify the problem if we limit ourselves to headache occurring as the sequel of head injuries of minor severity, and without evidence of local damage to the brain, either through destructive injury or in consequence of hæmorrhage. It might be thought that these restrictions of our subject have reduced it to insignificance. This is, however, far from being the case, and it is often of the utmost practical importance to recognise the fact that seriously disabling headache is a common sequel to head injuries of an apparently minor kind, in which evidence of any direct local injury of the brain has been altogether lacking.

We have, then, ultimately before us the subject of serious headache as a sequel of apparently slight or trivial head injury.

HEADACHE AS A SEQUEL OF MINOR HEAD INJURY.

It is quite a mistake to suppose that the conditions we are considering are clinically indefinite and difficult to recognise. In well-marked cases one of the most fully characteristic of clinical pictures is produced.

The Causal Injury.—There are two types of accident which fulfil the conditions we have laid down. Both are fairly common, of quite moderate severity, and seem at the time of infliction to have caused no definite or severe cerebral injury. In fact, the mildness of the whole affair often causes both patient and doctor, if one is consulted, to congratulate themselves on no harm having been done, and to ignore the necessity for precautionary treatment.

In one type the accident is a fall on the head, as, for example, from a horse. The patient develops slight concussion of the brain; there is momentary unconsciousness which is quickly recovered from, and followed by dizziness and headache, which clear up in a comparatively few hours. I may say at once that I use the term concussion, as I think it should only be used in the strict classical sense to indicate an essentially transient state due to head injury which is of instantaneous onset, manifests widespread symptoms of a purely paralytic kind, does not as such comprise any evidence of structural cerebral injury, and is always followed by amnesia for the actual moment of the accident.

In the second type of injury the violence is characteristically limited to a localised area of the skull. This may be produced by the patient accidentally running against some obstacle, by a blow from such a weapon as a stick or sword, or by the grazing impact of a bullet. In these cases concussion is characteristically absent; there is no loss of consciousness, and the patient retains a clear memory of the moment in which the injury was received. If the blow was over some part of the brain slight functional disturbances in which are capable of being manifested in symptoms, there may be transient numbness and tingling in the corresponding limb, or clumsiness in the use of it. Such phenomena are not relevant to the limited subject we are considering, and perfectly characteristic cases of traumatic headache commonly occur without them.

We have, then, a patient who has sustained one or other of these accidents. He has been shaken and is in some discomfort for a few hours or even a day or two, but has already begun to feel that, ugly as the affair seemed at the moment, no harm has been done, and then he begins to suffer from headaches.

As I have already said, I take headache as a representative symptom, ignoring for our present purpose the constellation of minor manifestations of which it is undoubtedly the most important and outstanding figure. It is necessary now to define the clinical characters of these headaches.

CLINICAL CHARACTERS OF TRAUMATIC HEADACHE.

Onset.—If headache has been a well-marked immediate consequence of the injury it may be continued into the sequelar headache we are considering. If the patient has been laid up as the result of the injury, the headache is apt to come on when he resumes active life. In any case it is often a week or two before the patient realises that he is faced with a distressing and disabling trouble that shows no tendency to early spontaneous recovery.

Occurrence.—It is usual and almost characteristic for the headache to occur in attacks which last for periods varying from a few hours even to two or three days. Between attacks the patient may feel absolutely well in every way. The attacks are apt to be brought on by physical exertion severe or prolonged, or by mental excitement anxiety or fatigue, and by such combined influences as walking in bright sunlight, or in crowded streets, and the many not always obviously exacting activities of town life.

Quality of the Headache.—The pain is of a severe throbbing, bursting character. Like that of migraine it is made worse by any effort, and by bright light or loud noise. It may prevent the patient from sleeping, but like many other kinds of headache is often brought to an end by prolonged sound sleep. During the attack the patient is usually restless, intolerant of company or of any kind of attention, and irritable. In severe cases there may be during the attack almost maniacal irritability and sometimes a semi-delirious excitement. The severest attacks do not usually last more than a couple of days.

Results of Physical Examination.—It is possible, and indeed quite common, for these symptoms to occur without there being any physical signs of definite brain injury, such as even the minor grades of sensory disturbance of cortical type, defects of finer motor coördination, or alteration of reflexes. There is, of course, nothing in the nature of the cases to prevent such a severe grade of injury being present as would produce these signs, but I wish to put emphasis on the statement that many cases of the typical headache are met with in which no physical evidence of brain injury is to be made out.

PATHOLOGY OF TRAUMATIC HEADACHE.

It has sometimes been supposed that these symptoms are due to a psycho-neurosis determined by the injury. Such an opinion has found support, in the total absence of objectively discoverable evidence of cerebral injury, in the fact that the symptoms tend to subside under rest and easy conditions and to be aggravated on the resumption of active life, and in the supposed fact that head injuries are particularly apt to lead to the so-called traumatic neuroses.

I need not criticise this hypothesis, as I shall immediately be setting before you what I regard as a definitely established organic pathology; but I may pause a moment to remark on the conception that traumatic neuroses are especially likely to follow head injuries. It seems probable that an injury is related to the neurosis it determines, as a painful and terrifying experience, the memory of which does not lapse in the normal way but becomes associated with other unassimilated memories and repressed impulses. It is clear, therefore, that the survival of an actual memory of the accident is an essential factor in the production of a neurosis. Now in a large proportion of cases of head injury (including a considerable number of the special group of cases we are considering) the onset is with concussion, and therefore, since a localised absolute amnesia for the accident is always produced by concussion of the classical type, there is no memory at all of the occurrence of the injury. This conclusion is supported by actual clinical experience, which thus confirms the view implied above, that the concussion amnesia is a true organic absence of memory caused by cerebral disturbance.

There can be little doubt, however, that these traumatic headaches are due to definite organic disturbance within the skull. The immediate pathology of headache in general, by which I mean the actual mechanism by which it is produced, has not been the subject of very much attention, though the facts available admit of a reasonably probable sketch being made. In the first place, there is no reason to suppose that disease or injury of the brain itself can be the immediate cause of headache, in the strict sense of the term. As with other serous cavities, the contained organ itself is relatively, if not absolutely, insensitive, and pain can be aroused only by disturbances of the lining membrane and its septa. As with other serous membranes, also, it is probable that the most effective pain-producing stimulus is stretching. Now the arrangement of the dural septa is such that variations in the amount of intracranial pressure and inequalities in its distribution tell on them by causing alterations in tension. Thus it comes about that headache of organic origin is a direct expression of disturbances of intracranial pressure however these may be produced. Such a conclusion is in obvious agreement with clinical experience. It is probable that in nature a reduction in intracranial pressure is but rarely the cause of headache. It is plain, however, from the arrangement of the dural septa, that a local reduction in pressure can give rise to painful stretching until the disturbance has become equalised. This, of course, is the mechanism by which is produced the headache that often follows the withdrawal of fluid by a lumbar puncture.

When a disturbance of intracranial pressure is severe or rapidly progressive the consequent headache is continuous. When the disturbance is moderate, and either stationary or only slowly progressive, the headache is apt to be only paroxysmal. This latter is the case with a certain number of slow-growing cerebral tumours in their early stages, and as we have seen is almost characteristic of traumatic headaches. As to the nature of the disturbance in the case of traumatic headaches, we have a large body of direct evidence observed at operations. On such occasions there is always some increase in the intracranial tension, but usually this is only moderate in amount, since an operation is not likely to be undertaken during the actual course of an attack. This increase of tension is associated with one or other of two conditions of the brain itself. In cases where the headache has followed an injury causing concussion, the brain is œdematous and exudes an undue amount of fluid when exposed. In cases where the headache has followed a localised blow on the head, and the region struck has been explored, the brain shows by its swelling and blood-staining that it is the seat of a localised bruising. It is highly probable, therefore, that in both cases the increase of intracranial tension is due to the brain being swollen as the result of bruising; in one type of case, probably throughout its substance, in the other type chiefly, at any rate, at the point struck. If it be granted as reasonable to ascribe traumatic headache to a disturbed intracranial tension consequent on bruising of the brain, three points yet remain somewhat obscure and in need of discussion. These are the long persistence of the symptoms, the intermittence of the symptoms, and the mechanism by which the bruising of the brain is produced.

Persistence of Cerebral Contusions.

Traumatic headaches are notoriously capable of persisting for many years, and a difficulty at once presents itself in supposing them to be due to a mere bruise of the brain. This difficulty can be met only by the recognition of a very important and perhaps the only really special principle of intracranial pathology. This principle is concerned with the unique status of the brain as the one organ in the body enclosed by a capsule which is wholly inextensible by any physiological force. When any other organ is contused and its substance distended by extravasated blood, it can swell as a whole practically without limit, so that its circulation can be liberated from embarrassment by pressure, and the effused blood carried away relatively soon. Again, it is possible for such an organ only very slowly, or perhaps never, to regain exactly its normal size, and yet in no way to be for this reason a cause of symptoms.

Neither of these possibilities is open in the case of the brain. Enclosed within its inextensible capsule, the skull, the organ can undergo compensatory swelling only to a strictly limited extent. The result is that the circulation through a contused area remains embarrassed by the extravasated material present in it, and resolution by absorption of the bruise is indefinitely prolonged. It is surprising how long after the injury the signs of contusion will remain evident in the injured area. I have myself exposed by operation an area of brain that had been bruised by the glancing contact of a bullet with the skull no less than four years earlier. The brain showed a bruise that appeared as fresh as if it had been inflicted within a few weeks. This inordinate and unique delay in the resolution of contusions is fully adequate to account for the striking persistence of traumatic headaches.

Intermittence of Symptoms.

Although the skull encapsules the brain with a certain closeness, it does not do so so closely but what a margin of accommodation is left, which permits freely of the variations in the size of the brain due to the circulatory mechanism. An encroaching lesion, therefore, such as an early tumour or a moderate contusion, may have its effects, as it were, contained entirely within this marginal space as long as the circulatory movements are tranquil and small. The moment, however, that such movement becomes active, the fact that the intracranial space is actually encroached upon becomes manifest in an evident elevation of the intracranial pressure and consequent symptoms. Patients at such a stage often observe that every repetition of an act like stooping, which, of course, raises the venous pressure and expands the brain, causes a momentary qualm of dizziness and headache. Along such lines as these are to be explained the intermissions in the symptoms of unresolved contusions without improvement in the actual condition itself, and the mode of action of the various causes that precipitate the attacks.

Mechanism by which Cerebral Contusions are Produced.

We have spoken of the complete rigidity of the skull in relation to forces of physiological magnitude. We must now turn to its entirely different behaviour in relation to forces of another order. It seems natural to think of the skull as a very strong shield and enclosure of the brain, which yields only to extreme violence, and only when it is broken. The natural result of this attitude is to put fractures of the skull into a position of primary importance, and to treat injuries of the brain as mere complications of them. This conception is, of course, nowadays quite exploded, and I refer to it merely that by calling attention to the relative pathological insignificance of fractures of the skull, I may give emphasis to the importance of head injury without fracture.

In relation to forces of adequate magnitude and kind, the skull behaves as a yielding and highly elastic structure, capable of undergoing considerable distortion and recovering its form without fracture. It is this property which permits of the occurrence of a whole range of important cerebral injuries altogether apart from fracture of the skull. It is out of the question that we should enter here upon a discussion of the many hypotheses that have been produced to explain the various intracranial effects of violence applied to the head. It would also be useless, since there can be no reasonable doubt that the essential primary mechanism in almost all cases is distortion of the skull.

The skull is apt to be distorted in two different ways. One is the result of a fall on the head when the cranium is compressed between the surface the patient lands on, and the weight of the body conveyed to the base by the spine. In this case a general deformation occurs diminishing the volume of the cranial cavity as a whole, and causing the acute compressive anæmia which is represented clinically by the nstantaneously oncoming paralytic phenomena known as concussion. The second type of distortion is a local deformation due to a localised blow on the head. Here of course there is no general squeezing of the brain and no concussion. In both forms of deformation the brain is apt to be bruised, and when this occurs without fracture of the skull and without other cerebral injury we may get the pure form of traumatic headache due to simple unresolved cerebral contusion. would again lay the strongest possible stress on the act that these conditions can be set up by comparaively trivial-looking accidents, and that once estabished they are distressing and seriously disabling afflictions.

TREATMENT OF TRAUMATIC HEADACHE.

The headache of unresolved cerebral contusion is ortunately sometimes preventable, and almost always urable. Prevention is possible chiefly in relation to he widespread but slight degrees of contusion ssociated with general deformation of the skull and oncussion. It is to be attempted by the strict pplication of the old clinical maxim that every case of concussion must be treated by a definite period of rest in bed, and the very slow and cautious resumption of active life. The duration of such precautionary treatment may, to some extent, be regulated by the presumptive severity of the contusion in the given case. The best measures of this are the extent of the patient's loss of memory for the period of the accident, and the intensity of the so-called phenomena of reaction that have followed the concussion. Supposing headaches to have developed in spite of proper preventive treatment, they may be dealt with by another and lengthened period of rest in bed. This failing, a moderate decompressive opening in the skull and dura is practically certain of success. It should be made at the place of election low down in the right temporal fossa under the muscle. Localised contusion, as it has to be more intense to produce similar symptoms, is less amenable to precautionary treatment by rest, and is more likely to call for primary operative treatment. This consists in making an opening in the skull and dura over the contused region, so that the latter may be released from pressure, its normal circulation re-established, and resolution occur. There are certain cases in which the occurrence of a serious amount of local cerebral contusion may be assumed to be present from the very nature of the injury. Such an injury, for example, is a glancing blow by a rifle bullet. Here, though the skull seems to be intact, and even the scalp is only grazed, cerebral contusion may be assumed to be present, and operation advised, even in the absence of any early symptoms.

We have now reviewed a limited but very definite and compact section of the great subject of head injuries. This review has, I hope, illustrated to some extent an important branch of cerebral pathology—the functional relations of the skull and brain—and at the same time remained in close contact with the practical realities of medical work.

VULNERABILITY OF THE BRAIN IN THE INDIVIDUAL AND IN THE RACE.

We may now ask whether this same series of facts and inferences is capable of yielding any idea of more general scope, and capable of application outside the technicalities of medicine. There is one suggestion, at least, conveyed by these facts, which, to my mind, tempts further inquiry, and that is, that as compared with what one might perhaps have expected, the brain is shown to be a relatively vulnerable organ, and that this vulnerability is due to the failure of the protective function of the skull in face of even comparatively moderate violence of certain kinds.

That in very early life the brain has a high vulnerability is no unfamiliar idea. We owe our knowledge of the fact largely to the well-known researches of our President, published, as I may perhaps remind you, no less than 33 years ago. He showed in a long series of examinations of still-born infants that in somewhere in the neighbourhood of half the subjects there was definite intracranial injury in the nature of hæmorrhage and bruising.[1] It is a good example of the essential unity of all branches of medicine that is upheld in the very structure of our Society, that the student of cerebral pathology can still turn gratefully to this classical paper in obstetrics. The similar, though doubtless less pronounced, vulnerability that exists in the adult is revealed to us not so much by direct evidence, as through the unique obstacle to the resolution of minor traumatic lesions that is produced by the bony encapsulation of the brain. Any extended consideration of this vulnerability of the adult brain brings to light the probability that it is in some special degree a consequence of the characters of the modern European skull. It is more or less common and accepted knowledge that, for example, the African races are, on the whole, much less susceptible to the minor traumatic lesions of the brain than are Europeans. Blows on the head that would paralyse the latter are sustained with comparative indifference by the former, and it is obvious that this variation in susceptibility depends on a difference in the resistiveness of the skull in the two races. We thus find that our subject, in the first instance purely medical, has led us, as we suggested it might, into matters of a more general interest, and that we are now faced by questions less medical than anthropological. It is necessary, therefore, though of course, with every precaution of diffidence, to inquire whether it is possible for medicine to contribute in any useful way towards the solution of problems specifically those of anthropology. In the study of the evolution of man and the differentiation of the various races, the anthropologist is to a great extent limited to anatomical considerations of form and structure, and to him what may broadly be called functional considerations, though admittedly to be desired, are most often not available. The student of medicine, on the other hand, is primarily interested in function, and makes use of structural observations only in so far as they explain function. The tendency of medicine is more and more to lay stress on function, and to give emphasis to the principle that, at any rate in the individual, disturbance of structure lags far behind disturbance of function, while the study of function is a far more delicate method of differentiating the states of living matter than is the study of structure. The two races I have mentioned, African and European, afford incidentally a very good illustration of the difficulties of the anthropologist as seen by the student of medicine. We have full accounts of the differences of form presented by the two races, we learn that while in detail they are not very great, they are in sum at least, considerable; but we get nothing in the way of a rational explanation of the immense functional difference that is represented by the fact that while one race is capable of producing a continuously evolving culture, the other remains in this respect completely stationary both in its native habitat and in transplantation. It does not seem that there are differences of cranial capacity or convolutional complexity marked or constant enough to be correlated with this great functional disparity; it would appear, therefore, that the problem is insoluble by anatomical methods, or that the anthropologist must tend to minimise the significance of the functional difference that, from our point of view, is so great.

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[1] H. R. Spencer: On Visceral Hæmorrhages in Still-born Children, Trans. Obst. Soc., 1891.

We have seen that the European skull does not protect the enclosed brain from injury so efficiently as does the African skull. This must be because the latter is the stronger, and more rigid. From the anatomical point of view, this superior strength is evidently not very striking, since, as far as I know, it has attracted but little attention and led to no attempt being made to measure it. From the functional and medical point of view the superior strength of the African skull is at once obvious, and is plainly a very important racial character. The superior rigidity and massiveness that in the African are not anatomically very obvious, at once become unmistakable in the skulls of prehistoric and admittedly more primitive races, such as Neanderthal man, and Piltdown man, in which the massiveness of the cranium has impressed all observers. The relative slightness and flexibility of the European cranium is, then, a leading character of the race, and since, as we have already shown, it brings with it gross functional disadvantages in the resistance of injury, we may assume that it has some deep and real significance in compensation. That is to say, it "paid" the European, so to speak, to develop a type of cranium which put him at a serious physical disadvantage in contest with his primitive competitors and even with contemporary races of to-day; what can have been the "price" he got in return that prevented the transaction from being the bad bargain it so manifestly might have been, but was not?

EVOLUTION OF THE SKULL IN RELATION TO FUNCTION.

If we survey the evolution of the skull in a very broad and general way, it is plain enough to see that the factors that destined the anterior ganglion of the primitive animal to be the brain of the higher vertebrate, rendered it inevitable that the part of the skeleton that should ultimately furnish the capsule of the brain should be from the first involved with other functions, such, for example, as nutrition and respiration. The cranium, therefore, in addition to acting as the capsule of the brain, has had to take part in forming the nasal respiratory apparatus, the apparatus of mastication, and in providing extensive areas of attachment for the trunk muscles. It cannot but be supposed that these various functions have interacted on one another, and that the interaction has compromised the perfection of the individual function. Thus, for example, the more the cranium had to provide for the attachment of masticatory and neck muscles, the less fully and sensitively could it fulfil its function of cranial capsule, and allow the smaller individual variations of the brain to have their fullest and least restricted scope. It is interesting to notice that when the skull was involved in yet another function—providing attachment for horns—cerebral development seems to have been abruptly checked. In man, even of the most primitive types, the liberation of the cranium from accessory functions took a large step forward but long remained imperfect. In Neanderthal man the brain was not uncommonly as large as, or even a good deal larger than, it is in the average European, and yet this great brain was enclosed, and perhaps we may say imprisoned, in a hugely massive cranium that gave attachment to very extensive masticatory muscles, and was encroached upon posteriorly by neck muscles far more widely than is the skull of any other race. It cannot be supposed that in such a veritable fortress of bone the brain was as free to develop its potentiality for small individual variations as is a brain less formidably enwalled.

It seems probable that a progressive civilisation—that is to say, a cultural evolution which, though perhaps aimless, is continuous—depends less on the appearance of unusually able and original individuals in the race than on the free production of quite small variations round the mean. Contributions of originality, in order to be continuously and securely built into the fabric of a culture without disturbance, should be individually small or even infinitesimal, and it is this condition that appears to be realised when the brain is free to develop its minor variability, and to be lacking when the brain is subject to the slight restricting effect of a cranium loaded with accessory functions. There seems, therefore, a certain plausibility in the hypothesis that the secret of the modern European type—and I use that term, of course, in the sense of the anthropologist rather than in that of the historian—lies in the capsular function of the cranium having acquired in that type for the first time a definitive supremacy over the accessory functions. If it is this *supremacy* of the one function that was the original variation that constituted the European type and is an inherited character in it, then it must be capable of producing progressive effects, and we ought actually to be able to detect evidence that the accessory functions of the cranium are undergoing decay. The relative slightness and low rigidity of the European skull in comparison with the African is possibly a manifestation of this process, and is probably progressive. European skulls are without any doubt remarkably variable in density and thickness, as anyone with operative experience can testify, and such variability is, at any rate, highly suggestive.

It is generally recognised that the masticatory apparatus of modern man is undergoing atrophic changes, and at no very slow rate. This is, of course, most clearly seen in the teeth, in which the process of suppression of the molars from behind forward has gone so far that already we may almost regard two fully erupted molars on each side as more properly representing the normal than three. It is to be remembered that the molars are still physiologically the most valuable of the teeth, and those the loss of which produces the most serious effects. On this account alone, and apart from far more serious theoretical difficulties, it seems impossible to assign any value in the explanation of their suppression to disuse. A more trustworthy line of speculation is suggested by the fact that it is the anterior teeth which seem least to show the tendency towards suppression, those teeth, that is to say, which are actuated by the masseter muscle, which is not directly connected with the cranium. On the other hand, the teeth which do show the tendency to suppression are those associated in function with the temporal muscle which arises directly from the cranial wall. The cranium is, so to say, throwing off the remnants of its masticatory function, and the temporal molar group is consequently tending to disappear.

No one could acknowledge more readily than I do the speculative nature of these suggestions; at the same time it may perhaps fairly be said that they bring into some kind of relation a body of facts that possibly has not been viewed in connexion before. However that may be, I would rather claim my justification for troubling you with them in the attempt to show that even a strictly technical subject and one of everyday practical importance to the medical man, cannot exist in isolation, but tends inevitably to throw out implications of wider and wider reach, and of more and more general significance.

Goulstonian Lectures

ON SOME

WASTING DISORDERS OF EARLY INFANCY.

Delivered before the Royal College of Physicians of London

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LECTURE III.[1]

Delivered on April 1st, 1924.

IN this final lecture I propose first to deal with sulphæmoglobinæmia. I know of no instances in the literature of the occurrence of sulphæmoglobinæmia in infancy. I would therefore like to give some details of an infant who, whilst under treatment for atrophy, developed sulphæmoglobinæmia.

A child, 3 weeks old on admission to hospital, weighed 8 lb. 2 oz., and had a history of projectile vomiting. There was no evidence of pyloric stenosis; the child was of normal colour and with no physical sign of disease, but soon after admission diarrhœa developed, accompanied by a slight degree of fever, and there was a continuous fall in weight to 5½ lb. The stools during the first part of this period were very green, and then it was noted that they took on a bluish appearance, were, indeed, almost Cambridge blue. The stools were examined for the presence of *Bacillus pyocyaneus* with negative results. A few days later the sister of the ward was struck by the bad colour of the baby; he was very blue and she therefore administered oxygen, but reported that this administration made no difference to the colour. On questioning the sister, she told me that the child had been blue for short periods during the previous two or three days. For the following three weeks the child was constantly blue, the colour gradually fading during the third week. The blueness was apparently more marked at night, but this, I think, was probably due to artificial lighting. The colour was very striking, being almost of a leaden hue; it affected the skin generally, but was most marked in the extremities and mucous membranes. Blood removed for the purpose of spectroscopic examination was chocolate in colour. The spectrum showed a band in the red to the left of the D line, which remained after shaking the blood with ammonium sulphide, thus differentiating it from the band of methæmoglobin. It has been stated that the condition is probably related to the presence of a nitrite-producing bacillus in the saliva, and that nitrites are present in the urine and saliva.[1] I therefore examined both the secretions (by Gries and Gries Ilosvay tests) for nitrites, but in neither secretion was I able to find any trace of them. The urine was examined directly after it had been passed, but these investigations were not carried out when the colour was most intense. Dr. H. G. M. Henry, bacteriologist to the City of Birmingham, very kindly examined both the swab from the buccal cavity and the stools for the presence of nitroso-bacilli, and again with negative results. It is interesting to observe that from the time that the notes state "colour is apparently almost normal," the increase in weight of the child was almost continuous from 5 lb. 8 oz. to 10 lb. 3 oz., when he was discharged from hospital. During this time there was never any return of the blue coloration, and since the child's discharge from hospital, now a year ago, his condition and progress have been normal. During the early period of the child's gain in weight, and after receiving a proprietary food for seven days, œdema of face, hands, and feet developed. The œdema lasted four days, gradually disappearing. The diet was unaltered. The œdema was of the type described by Bloch as dystrophia amylogenetica, although this child had not received large quantities of carbohydrates, the amount of sugar in the food in the dilution used being about 8 per cent. I should also like to add that although the case was under my charge, the diagnosis was suggested to me by my colleague Dr. Laurence Ball.

PYLOROSPASM.

The occurrence of a definite clinical syndrome, pylorospasm, has been denied by many authorities, whilst by others it has been regarded as a stage in the development of pyloric stenosis. It is generally accepted that a super-added pyloric spasm is the cause of some of the symptoms of pyloric stenosis, but that spasm alone can cause stenosis is not generally accepted. Clinically, it appears to me that it is quite possible to separate pyloric spasm from stenosis, and I feel convinced that such a condition does occur, and that it frequently results in the production of simple atrophy, but never results in pyloric stenosis. The latter statement is, of course, difficult to prove. I can only say that I have never seen a case of pyloric spasm become one of pyloric stenosis.

Pylorospasm probably can occur throughout the whole period of the time during which the child is fed on a fluid diet, but the commonest age is about three months. The following history is usually given: The baby was a normal infant and thrived well at first, subsequently vomiting occurred and the child lost weight. Throughout the illness vomiting was frequent and often severe, and constipation or diarrhœa was present. On examination the degree of wasting is noticed to be less than usually occurs in a case of pyloric stenosis of the same age and duration of symptoms. After feeding the outline of the stomach can be seen, and very often feeble peristaltic waves. The usual experience is that when examining these children for peristalsis, "they flatter only to deceive"; what seems to be the beginning of a well-marked peristaltic wave appears under the left costal margin and rectus muscle, but suddenly when the wave seems to be going to move across the abdomen the child wriggles, contracts one side or segment of the abdomen, and when he becomes quiet again there is not any wave to be seen. At other times quite well-marked peristaltic waves occur—so marked that I have had two cases operated upon as cases of pyloric stenosis.

A pyloric tumour cannot be felt. I am aware that a contrary view is held, particularly by American writers, who state that in severe cases a pyloric tumour is palpable; that in certain cases it can be felt to contract and relax from time to time, and that this alteration in consistence serves to separate the case from pyloric stenosis in which such variation is never observed. In my opinion, if a tumour can be felt, the condition is one of stenosis and not spasm. Alteration in consistence of the tumour as determined by palpation does occur in stenosis. Indeed, at times the tumour appears to fade away, because in diastole the stomach falls over and masks it, whereas in systole the tumour is uncovered. This was first pointed out by Miller and Wilcox.[2] One other point is, I think, strong evidence against the palpation of a tumour in pyloric spasm—namely, that the surgeon, when operating and directly palpating the pylorus, has no hesitation in saying whether a case is pyloric stenosis or not. If a tumour were present in spasm he would not be able to form such a clearly cut opinion.

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[1] In the second Goulstonian Lecture the word *decinormal* (THE LANCET, April 19th, p. 798, col. 1, line 47) should read *2 5 normal.*

Pain of a colicky nature is not an uncommon symptom in contra-distinction to stenosis, in which it is rarely observed. The children are often unduly miserable and fretful. The tongue is clean and anorexia is frequently observed. In stenosis, except perhaps in the terminal stages of the condition, anorexia does not, in my experience, occur.

Constipation does not reach the severe grade of pyloric stenosis, and not infrequently it is replaced by diarrhœa, or the stools may be normal in number. Vomiting may be severe and explosive in type, approaching the projectile variety, but again the severe projectile vomit seen in stenosis does not occur; neither is there residual vomiting. The vomit does not contain mucin. Very often after the patient is admitted to hospital vomiting is not marked; this is probably due to the fact that the patient responds quickly to treatment. A recognition of the significance of this fact would have prevented my mistake in having two cases operated upon as stenosis, to which I have already referred, and in which the diagnosis was made on the marked peristalsis. In these cases vomiting had not occurred during their stay in hospital, although there was a history of its occurrence prior to admission.

X Ray Diagnosis of Pylorospasm.

Radiographic examination may be helpful in arriving at a correct diagnosis of pylorospasm, but it may lead one astray unless observations are made for at least three hours after feeding. The stomach does not show dilatation as in stenosis, and peristalsis is usually much less marked. Dr. C. G. Teall, the radiographer to the Children's Hospital, Birmingham, informs me that he thinks it is possible to differentiate between stenosis and spasm. In stenosis, although there is delayed emptying of the stomach, yet if food does pass through the pylorus it does so more or less regularly over the period observed. On the other hand, the X ray appearance of the stomach in spasm may suggest a stenosis in plates taken one hour and two hours after food, but in a plate taken three hours afterwards practically all the meal will be seen to have passed through the pylorus. Of course, if food is retained in the stomach for long periods, four hours or more, the condition is certainly stenosis.

That a wrong deduction can be drawn from radiography unless observations are made for at least three hours after feeding is shown by one of our first radiographic examinations of pylorospasm. This case clinically was a case of spasm and not stenosis, but the X ray finding was one of pyloric stenosis, because practically all the food was retained in the stomach at the end of two hours. This child came to autopsy, and the clinical view that stenosis was not present was substantiated. If this case had been examined three hours after feeding, in all probability the X ray finding would have been a different one.

Under treatment the majority of the cases do well; the vomiting stops, due to a relaxation of the spasm, and the child begins to gain weight. Some cases develop into severe atrophy and die from that condition. In these cases I think death is due to atrophy and not to spasm, and that even in severe cases the spasm can be overcome, but the atrophy cannot be cured. I do not believe that operation is ever indicated, although it is recommended for the severest cases by some writers (Talbot and Morse).[3]

From what has been said it will be apparent that it is difficult to separate cases of spasm from pyloric stenosis; indeed, the statistics of recovery in pyloric stenosis under medical treatment have been subjected to the criticism that many of the cases regarded as mild stenosis were in reality pylorospasm. As in all forms of simple atrophy, pylorospasm rarely occurs in breast-fed babies; the spasm may be a reflex one due to the presence in the stomach of large curds from cows' milk feeding. Miller and Wilcox[2] thought the condition was due to hyperacidity, because they always found a hyperchlorhydria in examining stomach contents withdrawn one hour after a test-meal. Increased hydrochloric acid is, however, not always found, and when present is quite possibly the result and not the cause of the spasm, although in some cases the beneficial effect of adding sodium bicarbonate to the milk cannot be doubted. The observation of Spencer, Meyer, Rehfuss, and Hawk,[4] that a 1 per cent. solution of sodium bicarbonate hastens the emptying of the normal stomach, shows that this beneficial effect may not be due to a simple neutralisation of excess of acid.

It has been stated that pylorospasm is a manifestation of the hypertonus of the hypertonic infant, but it is frequently seen without any other evidence of hypertonia. In a recent paper White[5] states that this condition would be more correctly called gastro-enterospasm, because when there is pylorospasm there is also, he asserts, enterospasm. He further states that "gastro-enterospasm is a manifestation of autonomic imbalance" or vagotonia. The nervous mechanism controlling gastric and intestinal peristalsis is normally kept in a state of balance by the bulbar autonomic division of the parasympathetic, and its opponent the sympathetic. This mechanism is probably only a controlling one, for it has been shown by several observers that gastric peristalsis and the pyloric reflex have remained normal after both splanchnics and also both vagi below the diaphragm have been cut (Cannon). Stimulation of the vagus produces inhibition of cardiac sphincter and contraction of the pyloric sphincter. The chief evidence on which White bases his theory is the beneficial results he has achieved by the use of atropine, "which is a specific for vagogenic gastro-enterospasm." Based on Langley's work, he suggests that an excessive production of cholin with its accompanying stimulation of vagus may be the cause of the autonomic imbalance.

Treatment of Pylorospasm.

In the treatment of pylorospasm breast milk should be given if possible, but, unfortunately, it is rarely available. In the absence of breast milk I have obtained the best results by lavage of the stomach with bicarbonate of soda (1 per cent.) daily, and the giving of an ordinary milk mixture. It has been found useful at times to give citrated milk with the resulting smaller curd. I have also frequently added to the milk bicarbonate of soda (½ to 1 gr. per oz. of milk), and in those cases where hyperacidity occurs the results are good. I have tried the thick feeding of Sauer in a few cases, but without much success, although in one case it produced brilliant results after all the other methods, including the giving of atropine, had failed. On physiological principles skim milk has been tried, but, except when diarrhœa was present, with no better result than ordinary milk mixtures. Atropine, on the whole, has been disappointing, but occasionally has appeared to be of value. It has been given as belladonna or atropine before, with, or immediately after, food. Recently White's method of giving 1/1000 gr. 15 minutes before feeding, and increasing the dose if necessary, has been tried. He states that "definite flushing" is evidence of sufficient dosage, but I found in one case marked intestinal distension—so marked that it was necessary to stop the atropine—without any sign of flushing.

The consideration of pyloric spasm leads naturally to a main subdivision of my subject:—

INFANTILE PYLORIC STENOSIS.

This is a subject on which much, very much, has been written, but which has a curious fascination for the great majority of those interested in the diseases of childhood, and which still presents many controversial points for investigation and discussion. It is to some of these points, and to the question of treatment in particular, that I wish to draw attention. The history of the discovery of this disease is now well known, and I do not intend to enter into any extensive review of the literature. I would, however, like to point out that although the credit for having reported the earliest instance of the condition is given to one who, as Hutchison humorously puts it, bore the prophetic name of Hezekiah Beadsley, yet probably the first description in the literature was actually given by an English physician, George Armstrong, in his "Account of the Diseases most Incident to Children," published in the year 1777. His description is worth putting on record again.

> "In a child about 3 weeks old that died of the watery gripes, and which I opened some time since, I found most of the stomach towards the upper orifice and almost the whole fundus in the same tender state with that of the child just now mentioned" (this is a reference to what were obviously post-mortem changes in the stomach). "But towards the pylorus the structure was firm enough, as likewise that of the intestines both small and great. The stomach was quite distended with curdled milk and victuals with which the nurse had crammed the child, mixed likewise with some of the chalk julep, but the whole intestines were remarkably empty. There was no morbid appearances to be observed anywhere but in the stomach, and this *viscus* being so full, while the intestines were almost empty, it looked as if the disease had been chiefly owing to a spasm in the *pylorus*, which prevented the contents of the stomach from passing into the *duodenum*. Perhaps cases of this kind are more frequent than is commonly imagined."

The wide recognition of the disease, not only in the British Isles but all over the world, is largely due to the work of John Thomson and Still. The distinction of first demonstrating a case in London is due to Cautley, and also to him is due the credit for persistently advocating surgical intervention when such treatment was very unpopular. Of surgeons who have contributed considerably to our knowledge and successful treatment of this disease I would mention Stiles, Burghard, Nicol, Dent, and more recently Rammstedt, of Münster, Downes, of New York, Tyrrell Gray, Seymour Barling, and Higgins.

Ætiology of Infantile Pyloric Stenosis.

The view of the ætiology of the condition that commends itself to me is the one which regards the hypertrophy as a congenital abnormality, and the onset of symptoms as due to either a superadded spasm, completing the incomplete block, or to swelling of the mucous membrane of the pyloric canal producing the same result; or to a combination of both these factors. I have already stated that in my opinion pyloric spasm does not lead to pyloric stenosis.

I would quote two cases seen recently which may have some bearing on the ætiology. At the autopsy on a case of pyloric stenosis, in addition to the hypertrophied sphincter, there were seen in the descending colon three contracted segments of bowel, quite short in length and separated from each other by bowel having a normal lumen. On microscoping the bowel it was found that in these contracted portions the circular muscle coat was much thicker than in the uncontracted portions. This hypertrophy was a real and not an apparent one, due to the contraction of the circular muscle coat. The other case was one under the care of my colleague Dr. Ball. This infant was admitted to hospital as a possible case of pyloric stenosis. The history given by the mother was to the effect that the child was normal for the first month, after which time he began to have frequent vomiting, "pumping his food up just when it went down." His bowels had always been constipated and he had wasted considerably. After admission to hospital it was noticed that vomiting occurred directly after food was swallowed, actually at the time the baby was taking the bottle; there was absence of visible peristalsis and a pyloric tumour could not be palpated. An X ray examination showed a picture that was regarded as typical of achalasia of the cardia. At the autopsy it was found that the œsophageal wall was greatly thickened for about 1 inch above the cardiac orifice, and that this thickening was due to an enormous hypertrophy of the circular muscle coat. The mucous membrane of the œsophagus was normal, and above the obstruction the œsophagus was dilated. The pyloric sphincter was normal. These cases seem to show that hypertrophy, limited chiefly to the circular muscular coat, may occur in parts of the alimentary tract other than the pylorus.

Development of Pyloric Musculature.

Prof. J. C. Brash, professor of anatomy in the University of Birmingham, has very kindly undertaken some researches in the development of the pyloric musculature with a view to determining whether this would throw any light on the occurrence of the pyloric hypertrophy. Prof. Brash has placed his results and reconstruction models at my disposal, and I am greatly indebted to him for his kindness.

The following stages in the development of the stomach musculature from Keibel and Mall[6] are interesting. In a 10 mm. embryo—i.e., aged 6 weeks—the stomach wall consists of three layers of entodermal epithelium, mesenchyme, and peritoneal epithelium. In a 16 mm. embryo (aged 7 weeks) there is a condensed zone of mesenchyme which represents the future circular layer; this is best defined along the lesser curvature. In a 22·8 mm. embryo (age 7–8 weeks) the circular muscle is complete and shows a slight thickening towards the pylorus. In a 37 mm. embryo (age 9–10 weeks) a prolonged gradual thickening of this layer, followed by an abrupt thinning at the duodenum, is distinct now and in all later stages. In a 240 mm. embryo (age 27–28 weeks) an outer longitudinal layer is distinct in the pyloric part of the stomach, and it becomes thicker towards the duodenum.

The reconstruction models are those of the stomach and duodenum of a 15 mm. human embryo—i.e., less than 7 weeks old—and a 20 mm. cat embryo, and the following are Prof. Brash's findings and comments. The form of the stomach is clearly defined in both. The differentiation of the muscular coat (primary "circular" layer only) is clear in both, especially so in the cat, which is in a considerably more advanced stage of development. There are thickenings of the muscular coat at all bends, notably in the human embryo at the well-marked incisura angularis, and in the cat embryo at the pylorus. In the human embryo the edge of the "pyloric ring" is situated at the distal part of the bend to the duodenum, whereas in the cat embryo it is at the proximal part of the same bend. It is an interesting question whether the bend to the duodenum has anything to do with the thickening of the circular coat of the pyloric canal of the stomach as far as this part, or whether the bend is the result of the sudden transition from thick stomach to thin duodenum. The latter is the more probable.

In the cat the thickening at the pylorus is so marked that the mucous coat is crumpled and nearly fills the lumen, allowing only a pin to pass through in the model at 50 magnifications. The transition to the thin coat of the duodenum is very abrupt. Differentiation is not nearly so advanced in this region in the human embryo. The apparent thickening of the mucosa at the pylorus is, however, not to be taken as absolute evidence of a growth process. It may be due to muscular contraction produced by the preservation of the embryo. There are longitudinal folds of the mucosa in the body of the stomach in this specimen, and it is stated (Toldt) that these have been seen to be produced by muscular contractions in the freshly opened stomachs of embryonic cats.

It appears that the differentiation of the circular muscle coat and the formation of the pylorus take place so early that it is impossible to come to any conclusion as to whether the actual process of the formation has anything to do with hypertrophic stenosis of the pylorus. Assuming that the appearance of the mucosa at the pylorus in the cat is due to the growth of muscle, it seems probable that the pyloric muscle develops as far as it can at an early stage and practically obliterates the lumen—i.e., the conditions in the embryo are identical with those found in cases of pyloric stenosis at operation, or found post mortem in fatal unoperated cases. If normal conditions are produced at a later stage of development by differential growth of the muscles and the mucosa, then the cause of pyloric stenosis, assuming it to be a congenital abnormality, is likely to be found in the conditions that control this differential growth. Thus pyloric stenosis may be the persistence of a normal stage in the embryo.

The similarity between the condition found by Prof. Brash in the embryo of the cat and the condition of the pylorus at operation is, in my opinion, very striking and suggestive.

The theory that the pyloric stenosis may be due to hyperadrenalism in the mother[7] cannot, I think, be held in view of the published investigations of Barling and myself.[8] In this connexion it may be of interest to note that I have washed out the stomach of a case of pyloric stenosis (before operation) with adrenalin hydrochloride without any increase of symptoms; indeed, the child improved under the treatment, and I have also given the drug subcutaneously without any ill-effect.

Diagnosis.

In my remarks on pylorospasm I have stated that it is difficult to diagnose pyloric stenosis from pyloric spasm. In the diagnosis of pyloric stenosis the most important points are the history of the development of the illness, the presence of persistent and projectile vomiting, constipation, progressive wasting, visible peristalsis, and palpation of a pyloric tumour. Peristalsis, it is true, occurs in pylorospasm, but it is usually of much milder degree, and very rarely indeed is it the very obvious slow type so characteristic of stenosis. If with this type of peristalsis there are the symptoms detailed above, and if the presence of persistent and projectile vomiting, often very large in amount, can be verified, then, I think, the diagnosis of pyloric stenosis is justified, and the palpation of the tumour is unnecessary. If, however, the peristalsis is less pronounced, and it is difficult to be certain of the character of the vomit, palpation of the tumour is absolutely essential to the making of the diagnosis. The presence of a tumour is certain evidence of pyloric stenosis.

For a diagnosis of pyloric stenosis investigations other than the ordinary clinical examinations are unnecessary, but chemical examination of gastric contents and radiographic examination may both yield useful confirmatory evidence, and also give important indications as to the size of the stomach and the degree of stenosis. To the results obtained from the first of these methods I have already referred, and I would only add here that, although in my experience blood has occasionally been present, bile has never been found in the stomach contents or in the vomit. Dr. John Thomson, however, tells me he has seen bile in the vomit in three or four cases, and Still[9] says that he has also seen it on rare occasions. During the last few months there have been admitted to the Children's Hospital, Birmingham, two cases showing symptoms somewhat resembling pyloric stenosis, but which eventually proved to be cases of congenital duodenal ileus. In both cases bile was present in the vomit to a marked degree, and one of the cases was also definitely jaundiced.

Radiographic Investigation.

In the most recent contribution to the literature on the treatment of pyloric stenosis is the statement that the writers "do not as a rule give bismuth meals, because our experience has been that they may do harm to the infant who has no reserve power, and that they do not in ordinary cases tell us more than we can discover by clinical examination."[10] This statement is one with which I cannot entirely agree. Radiographic examinations have been carried out in a large number of my cases, and the condition of the patient has presented many grades from comparative healthiness to great feebleness, but I have not yet convinced myself that the examination has ever done any harm. At the same time, it is perhaps fair to say that in one case the ward sister informed me that in her opinion the condition of the child became worse owing to the long period (3 hours) it was kept without food; I should also say that although I have had moribund cases operated upon, I have not had them radiographed. As I have stated, radiography is unnecessary for a diagnosis, but even in ordinary cases it will tell us more than we can discover by clinical examination, unless under the head of clinical examination is included the removal of stomach contents, as for a fractional test-meal. Radiography gives us accurate information concerning the size of the stomach and its rate of emptying. As a matter of fact, it is not necessary to give the baby a barium meal to estimate the size of the stomach; indeed, Dr. Teall tells me that in his opinion possibly a more correct idea of the size is gained by not doing so.

It has been stated that X ray investigation will enable the physician to decide whether surgical or medical treatment should be carried out; my own practice is to have every case operated upon, so that I have not found radiography of any help from that standpoint, but from the point of view of investigation of the disease I think it is a very great help. For instance, radiography has shown that one of the advantages of the Rammstedt operation is that, for a time, a large part of the sphincter action is abolished, and that after a period of many weeks the normal sphincter control returns. One of the best examples of this effect on the sphincter is a case quoted in a previous paper.[8] A child, aged 11 weeks, before the operation showed on X ray examination very deep peristaltic waves, with retention of all the meal in the stomach for one hour, and of two-thirds of the meal for two hours. Three weeks later, after Rammstedt's operation had been performed, half the meal had left the stomach 15 minutes after feeding, and an hour later the stomach was almost empty. The same child, examined some five months later, and then aged 9 months, showed that emptying of the stomach contents had commenced 15 minutes after feeding, that one hour after feeding half, and two hours after feeding the whole of the meal had left the stomach.

When a barium meal is given it is usual to allow a three-hour interval between the preceding meal and the barium meal, and to allow another three hours interval before the succeeding. The meal used by Dr. Teall contains only a small amount (one drachm) of barium sulphate in an ounce of milk and an ounce of water; the child is spoon-fed, since this has been found to diminish the liability to sickness. Plates are usually taken immediately, one, two, and three hours after the meal, and another plate is taken on the succeeding day, the time after the meal being about 18–22 hours. The infant is photographed lying face downwards with the tube over the patient; this is done because of the difficulty of photographing the child in the upright position. The size of the stomach varies, of course, with the presence or absence of active peristalsis at the time of the taking of the photograph, but it is always seen to be enlarged. The largest stomach which I have seen occupied more than one-half of the abdominal cavity; this child was a girl, aged 3 months, from whom I removed, on washing out her stomach, more than 8 oz. of fluid containing a considerable amount of curd; the child made a complete recovery after operation.

The rate of emptying varies; in some cases the stomach commences to empty at once, and emptying goes on regularly all through the three hours. The amount passed through the pylorus may be considerable in this time, in one case as much as half the meal had passed, but this case was one undergoing medical treatment, and which was suffering from what proved to be a terminal diarrhœa. The cases in which a fair amount of food passes the pylorus might recover on medical treatment, and some physicians use this method of differentiating between cases which shall be treated medically and those which shall be treated surgically. I am convinced that it is a mistaken policy to treat these cases medically, because if so treated the majority eventually become worse and surgical treatment has then to be undertaken at a greater disadvantage than if the operation had been undertaken earlier. In other cases only relatively infinitesimal amounts of the meal pass the pylorus at the end of three or even four hours, and a considerable amount is found to be retained in the stomach wash-out at the end of 18–24 hours. Indeed, in one case a stomach wash-out showed the presence of barium 48 hours after the meal had been given.

Between these two extreme types occur the great majority of cases, which show the passage of only a small part of the meal through the pylorus at the end of three hours. I might perhaps add that X ray investigations agree with test-meal investigations in that the time required for the emptying of the stomach in atrophic infants varies very considerably. The stomach may be completely emptied at the end of one hour, or in cases of spasm, as previously indicated, practically none of the meal may have left the stomach at the end of two hours, although at the end of three hours the stomach may be quite empty.

The Rammstedt Operation.

When cases of pyloric stenosis were first recognised the type of peristalsis seen and post-mortem appearances of the tumour convinced many observers that surgery offered the only possible chance of cure. The results were not satisfactory and recoveries were reported by medical means, with the result that the pendulum of medical opinion swung to the opposite extreme. I was trained, and I am very proud to acknowledge it, in one of the strongholds of medical treatment—namely, Great Ormond-street Hospital. These methods of treatment I firmly believed in and carried them out in my own cases, but the results were very unsatisfactory, my recovery-rate being a very poor one. After the war period I determined to advise operative treatment, and since the appearance of a paper on the Rammstedt operation by Gray and Pirie,[7] every case of undoubted pyloric stenosis for which I have been responsible for treatment, without any selection whatever from more or less healthy children to moribund ones, has been operated upon. Every case has been operated upon because operation has given the child the best possible chance of recovery, and because this method is the only way to determine whether operative treatment is better than purely medical treatment. A certain number of cases during that time have refused operation, and these without exception terminated fatally. In a personal communication Holt tells me that he has come to hold the same view—namely, that Rammstedt's operation should be performed in every case—a view also shared by Poynton and stated by him in a recent paper.

The Rammstedt operation, consisting essentially as it does in dividing longitudinally the pyloric musculature and allowing the imprisoned intact mucous membrane to herniate through the opening, has been made the routine operation. The advantages of this operation are that it is easily and rapidly carried out, that it allows the food to pass by the natural channel over the duodenal mucous membrane, and that it does not interfere with the normal physiology as does a short-circuiting operation such as gastro-jejunostomy. The results of Rammstedt's operation reported in this country have been very encouraging, although no one has yet been able to produce figures that will compare with those of Burghard for forcible dilatation of the pylorus. The limitations of the latter operation are, however, well expressed by Still,[9] who says:—

> "In the past eight years Mr. Burghard has performed this operation on 46 of my private cases with only one death . . . . . This no doubt depends very largely on the particular operator, and cannot be taken as proving that the operation itself is as good as, or better than, the Rammstedt method. Indeed, in the hands of some surgeons it has had very little success."

Some surgeons might perhaps be rendered most surgeons. Of hospital cases, recorded by Still, that were operated upon by forcible dilatation, there were 12 recoveries and 16 deaths, figures which are easily surpassed by the Rammstedt operation.

At operation the pylorus is found to vary in length, thickness, colour, and consistency in different cases. The length of the tumour varies from about 3/8ths to 1½ inches. The reasons why these variations occur are not obvious. It is probable, as suggested by John Thomson, that whatever the condition of the pyloric sphincter at birth, its growth after birth is more rapid than normal, and that, as I have already indicated, imprisonment of the mucous membrane with the production of the typical symptoms occurs sooner or later. According to this view, in the acute cases, in which symptoms are early and severe, the pylorus should be relatively thicker and harder than in those cases in which the symptoms are milder and develop later. This, in practice, is frequently found to be the case.

Variations in Pyloric Tumours.

I am unable to account for the variations in length of the tumour, but some interesting observations by Wheelon and Thomas[11] on the relationship of the rhythmic activity of the pyloric sphincter to that of the antrum appear to throw some light on the variations in colour and consistency of the pyloric tumour. These observers carried out a series of observations, including naked-eye observations, examinations by X rays, and also the obtaining of graphic records by placing balloons in the antrum and in the pyloric canal. By the naked eye it was observed that peristaltic waves arose in the region of the pars media on the greater curve, and that the wave was greatest just in front of the vestibule where it often stopped; as a rule, however, slight wave contractions barely visible to the naked eye swept over the entire vestibule, to begin again as a powerful peristaltic wave which passed along the first part of the antrum. This progressed until finally the sphincter shut. At times the wave passed progressively from its origin over the vestibule and the first part of the antrum. When contracting, the force of the contraction was enough to cause marked anæmia of the part. This anæmia began at the gastric end of the antrum and gradually increased until the entire antrum was bloodless; at this point the sphincter began to lose colour, and this loss of colour persisted during the return of blood to the gastric portion of the antrum. All the methods used by these investigators showed that the antrum and pyloric sphincter are rhythmical in action—i.e., contractions and relaxations follow each other in a regular sequence. During the period of contraction of the antrum the antrum is pale, but the sphincter is relaxed and red, although commencing to contract and become pale just before the whole antrum is in contraction. After the whole antrum is in contraction, relaxation and reddening of the antrum begins, and the sphincter is most contracted and palest at the time of most marked relaxation of the antrum. These cycles occur at the rate of 3 to 5 per minute and are maintained for hours. Rhythmical motility was best obtained when the stomach contained food, but typical results were obtained from the recently emptied stomach.

Now the pylorus as seen at operation in pyloric stenosis is usually pale, hard, and avascular, but occasionally it is redder, softer, and vascular. The stomach at operation has usually been emptied by a previous stomach wash-out or by vomiting, and is also usually in the relaxed diastolic condition. In this condition, according to the observations of Wheelon and Thomas, the pylorus should show the pallor and firm contraction which is usually found.

I have already stated the reasons which in my opinion make Rammstedt's operation the rational proceeding in these cases, but mention might here be made of the support which such a method receives from the radiographic studies of Cole on gastric motility in man. He showed that the amount of contraction of the pylorus is proportional to the activity of gastric peristalsis—i.e., when gastric peristalsis is strong the sphincter is more tightly contracted. In pyloric stenosis there is, of course, very marked gastric peristalsis, and therefore the sphincter becomes more tightly contracted and the obstruction to passage of food greater. It would seem therefore, on theoretical grounds, that an operation like Rammstedt's operation, which eliminates for a time the sphincter action, is more likely to result in cure than treatment such as purely medical treatment, which does not eliminate the sphincter action.

After operation, visible peristalsis has been observed in a number of cases, it is less marked than before operation, and throughout the convalescence it becomes less and less obvious until finally it disappears. The wound in the pyloric wall soon becomes sealed with blood-clot and lymph. In a case examined 24 hours after operation the gap between the cut ends of the muscle was largely filled with lymph, the lymph being covered on the peritoneal side with a layer of blood-clot. This case also showed that even if only a thin strand of muscular tissue is left the mucous membrane will not herniate, and the condition is not relieved, for the operation was unsuccessful in this case, because the mucous membrane had been kept imprisoned by the merest shred of muscular tissue. After a time the lymph becomes organised and converted into young fibrous tissue. In a case examined 28 days after operation the herniation of the mucous membrane was well seen, and the gap between the cut ends of the muscle was filled with young fibrous tissue which was continuous on the one side with the peritoneal covering of the pylorus, and on the other side with the submucous fibrous tissue.

Post-operative Phenomena.

Full details of the operation and of pre-operative and post-operative treatment are unnecessary, as these have already been published. Successful results depend chiefly on careful attention to details. The margin between success and failure is a very narrow one, and without this careful attention on the part of the surgeon and physician failure will result. A most important factor in the post-operative treatment is the giving of initial small feeds, breast if possible, and their gradual increase. In my early cases I gave larger feeds, in amounts suggested in the paper by Gray and Pirie, but the great advantage of the small feed is that diarrhœa is less liable to occur, a complication that, if possible, should be prevented at all costs. It is interesting to note that although not adopting the same routine as that suggested by Barling and myself, Poynton, Higgins and Brydson have evolved a method of feeding in their cases which illustrates the same principle—i.e., initial small feeds cautiously increased. By this method of feeding the rapid increase in weight which occurs when larger feeds are given of course does not occur, but in many cases I am quite satisfied if the child for the first fortnight or so does not increase in weight, or only shows a small increase. Rapid increase in weight is the rule after 4 to 5 weeks, when the necessity for giving small feeds has passed away. I admit that this method of feeding is at variance with my recommendations when dealing with infantile atrophy, but I will explain my reasons for this inconsistency shortly.

Findlay[12] has very adversely criticised the giving of small feeds, and states that we continued unduly a starvation diet with fatal consequences; on the contrary, we feel convinced that by this diet we have cured cases which, treated otherwise, would have died. I have only seen one case in which the limitation of food might have been a factor in the fatal result; in that instance the child, who until a few hours prior to death had done extremely well, died from cerebral thrombosis (venous) on the twelfth day after operation; possibly if more fluid had been given subcutaneously or by rectum this would not have occurred.

The occurrence and explanation of certain post-operative phenomena is of great importance.

Diarrhœa.—All observers agree that this constitutes one of the greatest dangers to life during the post-operative period. Its occurrence is prevented to some extent by the giving of small meals as already stated, but even in cases so fed it may develop and prove a fatal complication. Like all atrophic children, these patients are liable to attacks of diarrhœa, but the liability appears to be greater than in simple atrophy. There is probably more than one cause of diarrhœa; one of the most important causes, it seems to me, is the diminished absorptive power of the intestine. The shrivelled, empty, atrophic appearance of the small intestine post mortem is well known, but there does not appear to be any anatomical change warranting the view that in pyloric stenosis the mucous membrane is atrophied. The diminished power of absorption is only for large amounts of material. The intestine has become accustomed to deal with a small amount of food only. If now, after operation, greatly increased amounts of food are allowed to pass into the intestine, it cannot absorb them, and diarrhœa results. In other words, a period of training of the intestine is necessary before the normal amount of food can be absorbed. As I have already pointed out, there is no evidence of deficiency of pancreatic lipase, and fat-splitting is normal. Probably the diarrhœa that occurs in cases treated medically can be explained wholly or in part in the same way, since in these cases diarrhœa is a late phenomenon, and associated with some relaxation of the pyloric block.

The evidence on which the foregoing statements are largely founded is based on clinical experience and from observations on the stools of patients taking small feeds only who were recovering after Rammstedt's operation. I have not given large feeds, nor have I examined diarrhœal stools, but from what has been said on the metabolism of fats, it will be remembered that when diarrhœa occurred fatty acids were present in excess in the stool. The presence of the fatty acid may give a greasy appearance to the stools, and this may be the explanation of why fat-splitting was supposed to be impaired in pyloric stenosis, and a pancreatic insufficiency inferred (Grey and Reynolds).[13]

Table I. shows two cases, observed for a considerable period after operation. The figures give the number of days on the metabolism bed, weight at the beginning and end of that period, average fat intake in grammes for 24 hours, the character and distribution of fat in stools, and percentage absorption. The first case shows that the power of absorption of fat increases as the period of time after operation lengthens, which may perhaps be accepted as supporting the view that the intestine is responding to its period of training. The other case does not show this so well, but all the experiments demonstrate that fat absorption under these conditions (small feeds and absence of diarrhœa) is good. In one experiment (R. 2), although the stools are semi-formed and absorption good, there is a high reading for free fatty acid which may indicate that the patient was on the verge of diarrhœa. For comparison with the results I have included figures showing the fat-splitting and the

TABLE I.—*Fat Metabolism in Pyloric Stenosis.*

Name.	No. days observed.	Wt. at beginning.	Wt. at end.	Distribution % total fats.					% absorption.
				Nature of stool.	Sap.	Free fatty acid.	Neutral.	Av. fat intake 24 hr.	
C. 1	12	7·10	7·12	S.F.	68·7	22·3	10·9	6·5	79·4
C. 2.	5	7·14	8·2	S.F.	76·3	20·5	3·3	12·5	84·0
C. 3.	5	8·2	8·5	S.F.	80·2	14·7	5·1	11·6	85·9
C. 4.	6	8·5	8·7	S.F.	90·3	11·4	1·0	13·3	87·8
C. 5.	4	8·7	8·7	S.F.	92·1	7·1	0·8	11·7	92·0
R. 1.	5	6·0	6·1	S.F.	62·6	19·6	17·8	4·4	87·5
R. 2.	5	6·1	6·0	S.F.	49·7	34·6	15·7	6·7	86·7
R. 3.	5	6·1	6·7	Const.	85·2	7·1	7·8	11·4	88·5
B.	4				95·2	3·7	1·0	23·0	

distribution of fat in a case which was being treated medically by one of my colleagues.

As a result of these findings I do not now, in the absence of diarrhœa, use skimmed milk feeds; if, however, diarrhœa occurs, a weak fat mixture is substituted, and the fat content increased when the diarrhœa abates. The other causes of diarrhœa are probably the same as in infantile atrophy. Thus, in all probability, in artificially fed children of this type, there is an invasion of the upper intestinal tract and duodenum with *Bacillus coli*, and bacterial fermentation of sugar with the production of diarrhœa. Such an invasion may not occur prior to the operation because of the high acidity of the gastric juice in pyloric stenosis. I have not tried giving hydrochloric or citric acid milk in these cases, but theoretically it is worth a trial in infants about 3 months old. I do, however, frequently use a less fermentable sugar than cane sugar or dextrose—viz., dextrimaltose. The dextrimaltose should be kept in solid form and added to the milk. At one period recently I had three cases recovering from Rammstedt's operation, all of whom were being given dextrimaltose with their feed. To ensure greater accuracy in measurement the dextrimaltose was made up in solution. The same solution was used for some three or four days, when all these children became very ill; one vomited, the stools were loose; they all rapidly lost weight, one losing 15 oz. in a week. The fat in the food was cut down and solid dextrimaltose substituted for the solution, and they all made a good recovery. Finally, infective enteritis is just as likely to occur in pyloric stenosis as in infantile atrophy. The incidence of diarrhœa in infantile atrophy is considerable, although naturally the figures given by different writers vary. In the 100 cases of which I worked out the ætiology of atrophy, diarrhœa occurred in 27 after admission to hospital, and loose stools in an even larger number still.

Atrophy.—In a few cases after relief of the obstruction the child, already wasted, remains wasted and atrophic for weeks before beginning to put on weight satisfactorily. This group is not a very large one but it is a very definite one. The following is the most striking example that I have met with. A child, aged 11 weeks, was operated upon when its weight was 7 lb. 10 oz.; three weeks after operation he had gained 14 oz. (8 lb. 8 oz.); for the following three months his weight varied between 7 and 8 lb., and it was not until four months after operation that he began continuously to put on weight. The gain in weight, once it had commenced, was a rapid one. During this period of four months he was discharged from hospital and readmitted three times, each time with an attack of diarrhœa. I have seen altogether four of these cases and three of them recovered. These atrophic cases are also mentioned in the paper by Poynton and his colleagues, and apparently in the cases they saw the duration of symptoms before operation was a very long one; in my cases, however, this is not so, since the longest duration of symptoms was 28 days.

Vomiting.—In some cases this ceases directly the operation is performed, but it is not unusual for occasional vomits to occur for the first two or three days after operation, or even for as long as 14 days after the operation. The vomits are, however, usually small ones, and are not of the explosive and projectile type so characteristic of the cases prior to operation. The vomiting is probably largely due to the gastritis so usually associated with pyloric stenosis, and if it becomes troublesome can be treated by washing out the stomach with bicarbonate of soda (1 per cent.); one wash-out is usually sufficient to cure the condition. The probability of the occurrence of vomiting in any given case is greatly diminished by two procedures. First, careful pre-operative treatment, which includes a stomach wash-out once or twice daily for two days; and secondly, the use of nitrous oxide and oxygen as the anæsthetic. The use of this method of anæsthesia has another great advantage—i.e., the quick recovery of consciousness by the patient; the ward sisters have been greatly impressed by the superiority of this anæsthetic over others in this respect.

Post-operative Pyrexia.—This is common; indeed, there may be hyperpyrexia, a temperature of 107·8° F. (Poynton and others[10]) having been recorded; the highest temperature in my cases was 106°; this case died, but recovery has been recorded (Gray and Reynolds) with that degree of temperature. The pyrexia is usually of short duration, 24–48 hours, and all cases having hyperpyrexia developed the condition within 48 hours of operation. Some cases have shown pyrexia before operation, and after operation the degree of pyrexia may increase or diminish; fever is not to be regarded as a contra-indication for operation. It has been suggested that hyperpyrexia is due almost entirely to the anæsthetic (Gray and Reynolds), and that it does not occur with gas and oxygen anæsthesia. I have not seen hyperpyrexia after gas and oxygen, but pyrexia certainly occurs, the highest figure recorded being 103·8°. Personally, although so far I have not been able to produce a proof that will completely satisfy me, I think the explanation of the fever is to be sought for in the dehydration that occurs in these cases. The dehydration is a result of the disease. It is probably made somewhat worse by the operation, and considerably worse by the giving of subcutaneous saline if the solution used is a hypertonic one; in other words, the fever is essentially a "sugar and salt fever." In a few cases I have used continuous rectal hypotonic salines for 24-48 hours after operation. Pyrexia has been less frequent when this method has been used, and there has not been in any case any marked degree of pyrexia.

Comparison of Operative with Non-Operative Treatment.

In estimating the value of operative treatment in pyloric stenosis it must be remembered that medical treatment alone is a very lengthy process, often lasting three to four months or more, and that the issue is in doubt for a considerable part of that time. This naturally entails great anxiety on the part of the mother, and if she is feeding the child, may adversely affect the supply of milk. Operative treatment, on the other hand, if successful, usually offers complete recovery at the end of four weeks. This being so, it follows that even if operative treatment offers no better prospect of success than medical treatment, it is the more advisable procedure.

It is only fair in comparing the two forms of treatment to say that many cases are put down in statistics as deaths under medical treatment when they should really be classed as fatalities from lack of any form of treatment. Such cases come into hospital in an advanced atrophic condition, sometimes almost, if not quite, moribund, and in a condition when it is hopeless to expect them to receive any benefit from medical treatment. However, if Rammstedt's operation is performed on these cases a certain number of them will recover, and in assessing the values of the figures I give it should be remembered that there has been no selection of cases in any way whatsoever. Some of the patients have been absolutely *in extremis*; for instance, one had a convulsion just before the anæsthetic and died shortly after the operation was over. Every case which was not discharged from the hospital as cured has been included in the list of fatal cases, even when death was not the result of the operation, but due to intercurrent infection.

Most writers on the subject of treatment of pyloric stenosis have stressed the different results obtained in hospital and private practice. Indeed, my previously published results have been criticised on the grounds that these two groups were not considered separately, and the statement has been made that "so different are the results in these two fields of practice by either method of treatment, that to combine them in any statistical investigation . . . must necessarily vitiate the conclusions" (Findlay[12]). To avoid that criticism in the present lecture I have separated my cases into private and hospital patients. It will be noticed that I have seen very few cases in private which have received medical treatment, and all of these died. The number may be too small to be of any value; I have, however, had 11 private cases operated upon by Rammstedt's method with recovery in every case. It should be made clear that, although these were private cases, they were, with one exception, all treated in hospital. They became private patients simply because they were nursed in a private ward and because they paid nursing fees to the hospital, and in some cases, of course, medical fees as well. It is interesting to note that two cases which, because of lack of accommodation in the public wards, were treated in this ward proved fatal. I think therefore that the criticism quoted cannot be accepted as a valid criticism of my results.

The results I have obtained by medical treatment make very sorry reading, but bad as they are, worse have been recorded (Warren[14]), and as a basis for comparison they show what infinitely better results have been obtained when the help of a surgeon has been sought. The largest series of cases of pyloric stenosis with which I am familiar is Still's series of 248 cases[9]; his recovery-rate in private cases treated medically is a wonderful one, yet his view is that "when the mother is breast-feeding the infant, it is usually the wisest course to proceed at once to operation." He comes to this conclusion after discussing, as I have done, the effect on the mother of the anxiety engendered by lengthy medical treatment. In the following tables I have given for comparison with my own results those of Still (Table II.), and the results of Rammstedt's operation as given by Gray and Reynolds, and also by Poynton, Higgins and Brydson. (Table III.) The figures of the last group of writers are the most recently published ones, and show quite the best results so far recorded by British workers.

TABLE II.—*Comparison of Results of Cases Treated by Medical Means and by Rammstedt's Operation.*

—	Hospital cases.			Private cases.			Total.		
	Total.	Cured.	% of cures.	Total.	Cured.	% of cures.	Total.	Cured.	% of cures.
PARSONS—									
Treated medically ..	37	5	13·5	4	0	0	41	5	12·1
Rammstedt's operation ..	59	27	44	11	11	100	70	38	54·2
STILL—									
Treated medically ..	98	43	43·8	127	113	88·9	225	156	69·4
Rammstedt's operation ..	19	10	52·6	10	8	80	29	18	62

TABLE III.—*Results of Rammstedt's Operation.*

—	Cases.	Recovery.	% of cures.
Parsons	70	38	54
Gray and Reynolds	42	17	41*
Poynton, Higgins, and Brydson	57	42	73·6†

* Calculated from statistics given in paper.

† These authors give 70 per cent. recovery in 55 cases. They, however, exclude two cases (one cured) which should be included to compare with my series. Their percentage of cures is, however, calculated incorrectly, it works out at even a better figure than the one they give.

The operation has been done for me by several of my surgical colleagues, but in the majority of cases by Mr. Seymour Barling; it is interesting to note that the results obtained improve with each year, the recovery-rate for 1923 in 17 cases, being 70·5 per cent. If an analysis of the 32 fatal cases be made it is found that the length of time they survived the operation can be grouped thus: Not more than 24 hours, 9 cases; 1–3 days, 5 cases; 3–7 days, 4 cases; 7–14 days, 6 cases; over 14 days, 8 cases. In 12 cases the cause of death was post-operative collapse; in seven cases diarrhœa and in five cases bronchopneumonia. In two cases the bronchopneumonia was probably a complication of whooping cough. Hæmorrhage, peritonitis, and cerebral thrombosis were responsible for one death each, and in one other case, as I have already pointed out, the operation was an incomplete one.

I feel convinced that early diagnosis and early operation are essential to give the child the best chance of recovery. The reason why my results after Rammstedt's operation are so much better in private than in hospital cases is, I believe, because the former group of cases are usually diagnosed and operated upon earlier than the latter group. The truth of the statement that the shorter the time of duration of symptoms before operation the greater are the chances of recovery has been conclusively demonstrated by Poynton, Higgins and Brydson.

Conclusion.

In these lectures I have tried to lay before you the various views held as to the causation of infantile atrophy, the reasons for and against such views, and fresh experimental data in support of what seems to me to be, in the present state of our knowledge, the best explanation of these wasting disorders of early infancy. I have attempted to prove three theses:—

1. That in many cases there is a great deal of evidence in support of the view of the earlier English writers—Charles West, Eustace Smith, even Pemell and "J. S."—that the onset of infantile atrophy is due primarily to the supply of insufficient and unsuitable food.

2. That however the initial loss of weight has been produced the continuance of the atrophic state depends upon an altered metabolism and not upon disorders of digestion and absorption.

3. That the rational treatment of pyloric stenosis of infants includes the performance of the Rammstedt operation at the earliest possible moment.

If the arguments put forward have failed to carry conviction the reason is, I believe, not because the foundations on which they are based are unsound, but because I have not builded well.

Lastly, I would like to express my most grateful thanks to my colleagues, medical, nursing, and laboratory, for the generous help they have afforded me without which these lectures could not have been given; indeed, any merit which the lectures may possess is largely due to their assistance.

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THE LATE DR. W. H. BARRETT OF SOUTHPORT.—Dr. Barrett died at Le Havre on April 22nd on board his yacht *Muriel*. Owing to the breaking of a gangway ladder about a month ago he met with grave injuries, and whilst recovering therefrom on board he was attacked by a fatal pneumonia. The remains were taken to Southport and laid to rest there on April 24th. Dr. Barrett had retired from an extensive practice in Southport about ten years ago. Ever a keen sportsman, he took great interest in motoring and was an active yachtsman and a member of the Royal Clyde Yachting Club. After graduating M.B. and C.M. at Edinburgh University in 1883, he was for a time pathologist to the Royal Edinburgh Asylum, and lecturer in Queen's College, Belfast. He then moved to Southport, where he soon acquired a large practice and was an hon. medical officer of the local infirmary. His winning personality will be greatly missed by many friends in and beyond Southport. Dr. Barrett leaves a widow, two sons, and a daughter.

THE RELATIONSHIP BETWEEN THE ISLETS OF LANGERHANS AND THE ZYMOGENOUS TISSUE OF THE PANCREAS.

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IT is generally assumed that the pancreas consists of two separate and distinct parts, the zymogenous tubules and the islets of Langerhans. It is further accepted by many that the "internal secretion" of the organ is carried out by the islets and not by the zymogenous tissue. Thus, it follows, according to the current view, that "insulin" is formed only by the islets. The fundamental question at issue concerns the claim of the islets to rank as organs or masses of tissue *sui generis*. The experimental evidence has been conflicting as to whether these bodies maintain a constant form and mass under varying physiological conditions of the pancreas, or whether, on the other hand, they may undergo changes concomitantly with changes in the pancreatic parenchyma as a whole.

History.

My own interest in the subject was aroused 20 years ago by the appearance of a very important paper by Dale,[2] who found that an increase in the amount of islet tissue may be induced by exhausting the pancreas by means of secretin. Vincent and Thompson [9] [10] [11] came to the conclusion that the islets are part and parcel of the general secreting tissue of the pancreas. Under certain conditions (inanition) the islet tissue is markedly increased, most probably at the expense of the zymogenous tissue. If, after a period of inanition, an animal be restored to its normal condition, the pancreas likewise returns to the normal, the amount of islet tissue becomes normal, and the presumption is that alveoli are reconstructed from islets. The islet columns are frequently in complete anatomical continuity with the surrounding zymogenous tubules, and all kinds of transition forms are common throughout vertebrates. The work of Dale was also confirmed.

Bensley in 1911[1] employed methods different from those of Vincent and Thompson, and came to very different conclusions. It is largely owing to the acceptance of Bensley's results that the majority of authors believe in the "separate organ" theory of the islets.

A communication by Lane[6] had appeared in the year 1907. In this attention was called to two different kinds of cells within the islet; specific granules were described in each kind of cell.

Since the date of Bensley's communication several papers have appeared on the subject. Among those who supported the view that the islets are independent structures may be mentioned Weichselbaum,[12] [13] Homans,[3] and perhaps the majority of pathologists. On the other hand, Laguesse [4] [illegible] and Saguchi,[8] not to mention others, have strongly supported the views put forward by Vincent and Thompson.

Structure of the Islets.

Some years ago I carried out (in conjunction with J. P. Parsons) an investigation, using the histological methods of Lane and Bensley, and saw no reasons for changing my view. Continuity between islet and zymogenous tubules is a common occurrence throughout vertebrates. But Bensley, and others who agree with him, insist that the islet cells constitute a double histological entity, and that each of the two kinds of islet cell is distinguished from the zymogenous cells by absolutely characteristic cytological features—that is to say, by the possession of specific granules reacting to particular stains. In other words, although the zymogenous tubules may appear to run into the islet tissue, there is in reality a sudden change when we pass from a zymogenous cell to an islet cell, since the latter contains none of the specific contents of the former, and possesses for its part specific granules peculiar to itself. On this view no cell may rank as an islet cell unless it contains granules of one or other variety.

It may not be known to those who have not worked at the question how far the attitude just presented depends upon the results of work by two particular histological methods—staining by neutral gentian and acid fuchsin and methyl green. In the case of these stains it is impossible to be quite sure that we have used quite the same staining fluid as that used by previous workers. The quantitative details for making up the staining fluids are not very explicitly given, and there is considerable confusion as to the precise chemical nature of the dyes themselves.

The specific nature of the A and B granules has not been proved. Using the Lane B staining method with material from the guinea-pig we found that the histological picture corresponds fairly well with what Lane, Bensley, and others have described; some of the cells ("B cells") appear violet, due to the presence of violet-stained granules, and others (the "A cells") faintly coloured with the orange G. Employing Lane's method for the A cells, it was not always easy to mark their limits, and their nuclei did not appear to differ in shape from those of the B cells. Speaking generally, the A and B cells do not come out as clearly as one would expect after reading the descriptions of the above-mentioned authors. Sometimes it is even difficult to say whether a particular deeply-stained cell is to be put in the A or B category; the tint is sometimes brownish mixed with violet, or vice versa. In many cases only part of the cell is stained, in other cases one part of the cell stains more deeply than another. Thus the A cells (Lane's method) may be deep violet in one part, and the colour may fade away so that the other end of the cell resembles in tint the almost unstained surrounding B cells. It is thus by no means clear that we have to deal with two different types of cell. It seems possible that there are various stages of activity revealed by differences in staining reaction. Moreover, the investigation convinced us that the acinous cells of the pancreas contain granules which give staining reactions very similar to those of the B cells of the islets, and if the acid fuchsin and methyl-green method be employed, we find scattered throughout the pancreas certain cells which stain deep red, while others are green.

It cannot be allowed that the criterion for "transition" above referred to should be insisted upon. We can conceive that a real transition between zymogenous and islet cell might present itself in a different way. The number of zymogenous granules in an acinous cell might become gradually reduced as one approaches the edge of an islet, until at a certain point the cells are found to contain no such granules. Careful examination of these might then reveal the granules which are supposed to be specific for islet cells. Thus, there might be a certain degree of suddenness in the occurrence of the "islet granules," though the total change might reasonably be regarded as a real transition from one tissue to the other. This seems the more plausible in view of the anatomical continuity which is admitted to occur.

Effect of Inanition on the Amount of Islet Tissue.

Vincent and Thompson studied the effects of inanition in the dog, cat, pigeon, and frog, and reported that in these animals the effect is markedly to increase the amount of islet tissue at the expense of the zymogenous. These results, so far as concerns the bird, have been fully confirmed by Laguesse. Since that time the effects of inanition have been studied upon the rat, gopher, guinea-pig, and hen, with results entirely confirmatory of those of Vincent and Thompson. Bensley is of opinion that the apparent increase in islet tissue is accounted for by the normal variation which occurs. If this were the case it might surely happen in many cases that the mistake might be in the opposite direction. So far as we can learn, Bensley does not appear to have reckoned with the *amount* of islet tissue under any conditions. By his method he has counted the *number* of islets, and says that this is constant. Now surely the important point is the actual amount of islet tissue. Three or four large islets might easily represent a vast increase in islet tissue over a score of small ones. What happens, indeed, in many cases is that the very small islets, consisting of only a few cells, are increased enormously during inanition. Bensley's method is incapable of noting such a change. In the work carried out in conjunction with F. D. Thompson the ratio between the amount of islet tissue in the inanition animal and that in the normal pancreas was calculated by drawing the islets in ten successive sections with a camera lucida, and cutting out and weighing the paper enclosed in the outlines. In the pigeon the ratio was as 4·22 to 0·93. In the later investigations the planimeter was employed. By this method the amount of islet tissue in the hen after a period of inanition was found to be three times as great as in the normal.

The islet tissue found after inanition (including presumably many new patches) always stains well by the Lane B method. Thus they cannot be confused with patches of simply exhausted zymogenous tissue.

Effects of other Changes of Conditions on the Amount of Islet Tissue.

In rats a pure carbohydrate diet markedly increases the amount of islet tissue, and in frogs extirpation of the spleen produces a similar effect.

Conclusions.

From the above considerations we may with considerable reason conclude that the islets of Langerhans are not separate and distinct organs. They represent temporarily modified portions of the secretory tubules of the pancreas. It is true that by certain modes of staining some cells of the islets may be differentiated from others, but the differentiation may point to different stages of activity and not indicate two distinct types of cell. Moreover, these are signs of a similar differentiation among the cells of the zymogenous tissue. The islets are anatomically continuous with the zymogenous tubes, and the two kinds of tissue may be seen to merge one into the other. During inanition and under other circumstances the amount of islet tissue is regularly and markedly increased.

The view here presented is strongly supported by Oertel[7] from the pathological standpoint. This author has with great justice pointed out how meagre is the evidence which would convict the islets of Langerhans of being responsible for the secretion of insulin.

At the time that the discovery of insulin was reported by the Toronto investigators, I felt considerable doubt as to whether the controls were sufficiently rigid, and as to whether insulin might not be obtained from glandular organs other than the pancreas. At my suggestion E. C. Dodds and F. Dickens* have applied their method to the submaxillary gland of the ox, and have found that this organ yields 710 original Toronto rabbit units per kilo of gland. Several observers of the Toronto School have prepared insulin from various organs and tissues of the body, but the fact that such large quantities as we have just quoted can be prepared from a gland so like the pancreas in general structure cannot be without some fundamental significance.

It is yet too early to state dogmatically the relation between the fact discovered by Minkowski that extirpation of the pancreas produces diabetes, and the other fact that a pharmacologically active substance capable of reducing the blood-sugar can be obtained from the pancreas and other organs.

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* Privately communicated.—S. V.

(*Continued at foot of next column.*)

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THREE CASES OF
NEW GROWTH OF THE APPENDIX CÆCI.

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Two distinctly different kinds of new growth in the appendix cæci have been described under the name of carcinoma. One, a columnar-celled growth, has the histological characteristics of the type of carcinoma which occurs commonly in other parts of the intestinal tract, and exhibits, by a general dissemination of the new growth, the usual features of malignant disease. The other kind of growth is spheroidal-celled, and, although showing microscopic appearances suggestive of a carcinomatous nature, does not present other usual signs of malignant disease; invasion of the tissues is localised, and there is no tendency to metastatic dissemination. In its histological characteristics, and in the localised limitation of its invasion of the tissues, the second kind of new growth of the appendix resembles closely the type which has been described by Krompecker under the name of basal-celled carcinoma.

The three following cases, all of which belong to the second group, have occurred amongst the cases in which the appendix has been removed at the South London Hospital for Women during the last three years.

CASE 1.—A single woman, aged 21, admitted under the care of Miss E. Davies-Colley, with a diagnosis of chronic appendicitis. There was a history of an acute attack some two years previously, with persisting pain and tenderness about the right iliac region.

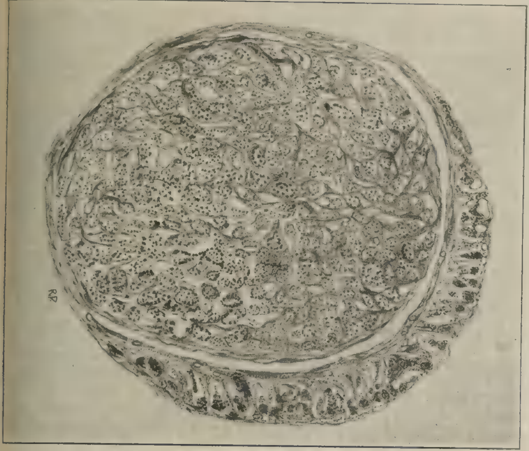
CASE 2.—A married woman, aged 39, suffering with a fibroid tumour of the uterus with severe menorrhagia, admitted into hospital under the care of Miss M. Houndsfield. In the course of an operation for the removal of the fibroid tumour it was found that the appendix was adherent to neighbouring parts, and that its tip was enlarged and bulbous. In this case there was not any history of past illness or symptoms suggesting any disease of the appendix.

CASE 3.—A married woman, aged 31, suffering from menorrhagia, was admitted under the care of Miss Davies-Colley. There was some tenderness in right iliac region, and an exploratory operation carried out. It was found that the appendix was adherent to the neighbouring parts, and presented a sharp kink at about the middle of its length.

Remarks.

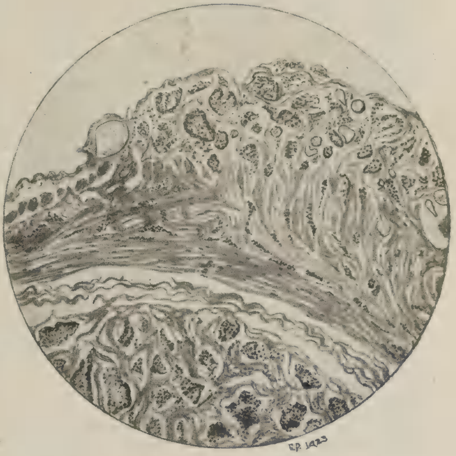
All three appendices showed definite macroscopic changes which were suggestive either of new growth or of tuberculosis. In Case 1 the new growth was presented as a general, indurated, thickening of the proximal portion of the appendix, the area of thickening was of whitish appearance, and the lesion was not circumscribed so definitely as in the two other cases. In Cases 2 and 3 there was an oval nodule of caseous appearance in the wall of the appendix. In Case 2 the nodule of new growth occupied the tip of the appendix, and the lumen of the tube above was pervious throughout. In Case 3 the new growth was situated at about the middle of the length of the appendix, just where the kink had occurred, and appeared to occlude the lumen completely.

FIG. 1.



Drawing of transverse section through new growth and appendix wall from Case 3. (Both figures are from drawings by Dr. Ruth Dingley.)

FIG. 2.



Showing portion of wall of appendix from Case 3.

In all three cases the histological appearances of the new growth were essentially similar (see Figs. 1 and 2). In each case the new growth consisted of columns, or continuous tracts, of spheroidal cells, showing a differentiated peripheral zone in which the cells tended to assume a cubical form. These columns of cells were included in alveoli formed by a fibrous reticulum, or stroma, the amount of which, relatively to the mass of spheroidal-cell growth, varied considerably in the three cases. In Cases 2 and 3 the new growth was represented mainly by the spheroidal cells, and the bulk of the fibrous reticulum was relatively small; the appearances were those of an encephaloid carcinoma. In Case 2 the bulk of the fibrous reticulum was more considerable and the general appearance was that of a carcinoma of the scirrhous type. In Case 3 the new growth had apparently occluded the lumen of the appendix completely. The lining epithelium had disappeared and only traces of the submucosa—in the form of small, isolated, masses of lymphoid tissue—remained. In this case the new growth had extended, through the muscle coat, to the subperitoneal layer. In Case 1 all trace of the mucosa had disappeared. In Case 2 the new growth appeared to be confined strictly to the muscle coat, and the mucosa was intact throughout.

In none of the three cases were the appearances those of a carcinoma originating in the epithelium of the intestinal mucosa, and alternative explanations of the cause of the new growth have to be considered. Some pathologists have suggested that these new growths of the appendix originate from an embryonic "rest." Other pathologists have regarded these new growths of the appendix as being of the nature of endotheliomata and, at any rate, as originating from some inflammatory condition of the appendix. In connexion with the latter hypothesis it will be noticed that in all of these three cases there was anatomical evidence of past inflammation of the appendix. In addition, there was in one case a quite definite history of an attack of acute appendicitis some two years before the new growth was discovered; and, in a second case, the new growth was discovered in the course of an operation for the relief of what appeared to be a chronic appendicitis. It should be added that, up to the time of writing and one year after the removal of the appendix in the third case, the several patients have remained free from any indication of recurrence of any trouble connected with the new growth which was removed by operation.

Note.—Since writing the above, a fourth case of new growth of the appendix has been operated on at the hospital. The patient was a married woman, aged 35 years, who was admitted under Miss Davies-Colley for uterine fibroids. At the operation the appendix was found to be tightly bound down; there was a marked constriction near the tip. A small yellowish nodule was found at the tip: the microscopic appearances of this nodule were similar to those in the other cases described.

THE PSYCHOLOGY OF VERTIGO.

By W. F. MENZIES, M.D. EDIN., F.R.C.P. LOND.,
MEDICAL SUPERINTENDENT, STAFFORDSHIRE MENTAL HOSPITAL, CHEDDLETON.

IN the endeavour to explain some common intracranial phenomena, whose physiological bases are little open to direct observation, it is usual to formulate theories; these are certain to be wrong, but if they are in accordance with observed facts they form for the time being useful working hypotheses. Vertigo is one of the phenomena which are not easy of approach from a common angle, coming as it does into the province of the general physician, the oculist, aurist, neurologist, and psychologist. In the recent combined discussion at the Royal Society of Medicine many facts from these various viewpoints were recorded, but the very nature of such a discussion precluded the possibility of correlating them.

Sequence of Processes Concerned.

It is essential, for the purposes of analysis, to dissociate the physiological processes concerned in a vital phenomenon from its realisation in consciousness. Of course, both are biochemical, but the latter is secondary, and is of the nature of awareness arising from emotility. Thus, the emotion of shame, the sensation of heat in the face and visible blushing are intimately associated, yet any one or any two or all three may occur in a given case. Again, vertigo, ataxia, nystagmus, headache, and a feeling of fullness in the head are nearly connected with changes of posture, yet any or all of them may occur in any combination. The hypothesis is here formulated that vertigo is a purely subjective sensation, and is the realisation in consciousness of the instinctive emotion of anxiety connected with the maintenance and adjustment of antigravity postures. Some clinical examples of the emotional nature of the condition are given below, but there are two other suggestive facts—viz., that the reaction time of vertigo is two to three seconds—i.e., that of an emotion, as opposed to the ·12 seconds of a cerebral reflex, and that hitherto no direct fibre connexion has been traced between the vestibular nuclei and the thalamus. Such terms as "objective vertigo" are misnomers, tending only to confuse definitions. Under this hypothesis the processes which result in vertigo are five in number: (1) a peripheral afferent stimulus, ocular, aural, or somatic; (2) a vestibular stimulus; (3) an adjustment response from intracranial and splanchnic plain muscle and from skeletal striped muscle; (4) an emotion; (5) its realisation in consciousness.

The reflex systems controlling antigravity postures which are centred chiefly in the various vestibular and other nuclei in the floor of the fourth ventricle, whose anatomical correlations are supplied by the median longitudinal fasciculus and vestibulospinal tract, and whose "locknut" is the cerebellum, receive their afferents from the semicircular canals, from the optic path in both its collicular and geniculate elements, and from skin, joints, and muscles. These systems have become increasingly intricate as the erect posture was gradually assumed, and now necessitate never ceasing changes in intracranial and vascular tonus in order to maintain a constant supply of oxygen to the neurons.

The Cortical Component.

For the purposes of quick adjustment of blood-supply the cranium may be regarded as a closed box, wherein fluid pressure is constant. The sympathetic fibres in the vessel walls are scanty, but their action is vital. Every change in posture is instantly compensated from the cardiac and splanchnic areas. Since the quantity of C.S.F. is minimal then, if more arterial blood be required the venous sinuses must partly empty; we assist this process when we instinctively inspire on rising up. But there is one exception to the closed box metaphor—viz., the vestibule and canal system—and it is precisely because the endolymph is not minimal and is free to transmit waves, that it so delicately registers the blood changes which it shares with all other parts of the encephalon and membranes. In this connexion it should be remembered that the vascular and sympathetic supply to this system is double, for internal vestibular branches arise from both carotids and vertebrals. Intracranial pressure may vary widely within certain physiological limits, and normal adjustments do not excite consciousness, but when maladjustment occurs, whether from excessive and confused stimulation, or from hampered and irregular plain muscle response, an emotional outflow is liable to be excited and the resultant conflict may enter consciousness. It may be asked why we should invoke the cortical component at all, why not be content with the pressure adjustments in the canals. The reason is that, on the one hand, intracranial adjustments are, like so many other sympathetic processes, massed reflexes, affecting equally vestibule, medulla, and cortex; and, on the other hand, there is sufficient evidence from the mental confusion, past-pointing, sensation of movement in the plane of stimulation, and other considerations of the accompanying mental state that this cortical component of vertigo exists and that it is primary—i.e., not received secondarily by way of the thalamus. What comes by the thalamus is the secondary emotion, later in the cycle of events. Likewise the medulla shares in the reflex, and vertigo from inhaling the morning cigarette is probably due to carboxylhæmoglobin in its vessels.

The Fear of Unconsciousness.

The maintenance of an adequate blood-supply to the brain is a primitive reaction, for the unconscious animal is helpless before its enemies and may very soon be a dead animal. So the fear of falling has from the earliest human stages been associated with the fear of unconsciousness. In this particular instance the warning from the canals and the quick alarm and vigorous response in plain and striped muscle awaken a defensive emotion, with adrenalin outflow and the rest, which is registered in the thalamus and thereafter conveyed to the cortex in strict accordance with the Lange-James theory. Normally, the physiological limits of the stimulus awake no emotion, then, of course, no vertigo follows. Although we know little of the endocrine and biochemical relations of an emotion, and practically nothing of its realisation in consciousness, beyond the association of pleasure with a free, and unpleasure with a restricted activity of the cortical oxidases, yet some such conception as that outlined here would appear to be necessary in order to explain the various clinical appearances of vertigo in both functional and organic conditions; mere intracranial tonus or atonia alone will not produce it. It is well known that section of the cervical sympathetic causes permanent ipsilateral dilatation of the arterioles in striate body, thalamus, and cortex. In a case of puncture of internal carotid from wound of neck, involving ligature of the common trunk, cervical sympathetic paralysis was present, but no vertigo. Again, it is recognised that at the onset of the epileptic fit the cerebral arteries are in spasm, yet vertigo is complained of by only a small percentage of those who describe a visual or auditory aura.

I cannot pretend to any opinions concerning intra-aural states beyond the routine neurological examination, but we are now in a position to consider some of the manifestations of vertigo in general medicine. The symptom is present in early paralytic dementia, where the cortex is still comparatively intact and anxiety or depression prevails. Later on, in the exalted or demented stages it is absent, although ataxia may be obvious. And so also in disseminated sclerosis the later stages of mental hebetude abolish it, although the patient can scarcely walk. A transient mimicry of this difference is to be observed in early alcoholic intoxication. Many cases of miners' nystagmus are unaware of the oscillations, and in these vertigo is unknown until some fellow workman, or the miner's agent, or too frequently the medical man, informs the patient of his condition. Thereafter all sorts of subjective sensations may arise, headache, diplopia, wavy pavements, nyctalopia, and so on, until ultimately hysteria or the anxiety complex or melancholia becomes established.

Vertigo is rare in the dark, and the neurasthenic who can scarcely walk down the street in the day-time will hurry on half-sideways at night, looking over his shoulder constantly to see who is following him. The absence of the usual visual stimuli does not come in here, for, of course, we do not walk at all if darkness is absolute. Giddiness is common to one standing on a height, but not when looking up into the sky from the ground level, although near objects are absent from the field in either case. Massed reflexes are wonderfully true to type, and their long phylogenic history brings them all for practical purposes into the class of conditioned reflexes. But if a new situation arises and if unaccustomed conditions are presented the whole process is apt to go wrong and, particularly, the vascular adjustments are confused or inadequate or excessive, and in any such case an emotion is excited in order that awareness to the danger of falling may be aroused in the organism. Syringing the ear and the vestibular reaction are instances of this. In sea-sickness the vestibular afferents are out of harmony with the optical. Birds are, from the nature of flight, peculiarly susceptible to vestibular variation, and from the time they leave the nest balance without fear on a swaying bough. But a few swings round by the feet produce the hypnotic state, complete paralysis, or even coma in a fowl, because the vestibular stimuli are now entirely foreign to instinctive experience.

Evidence from Morbid Anatomy.

In the toxic psychoses, notably in delirium, the post-mortem findings in the neurones—cloudy swelling, chromatolysis, vacuolation, and the like—show us how profoundly blood states influence the cortical oxidases, in the slighter degrees of these mental troubles—e.g., melancholia—headache, confusion, and vertigo often coexist. Nor can we doubt that the blood state will affect the canals equally; and so the toxic element can never be left out of account in the vertigo of anaphylactic or gastric conditions, anæmia, or high blood pressure. The mechanical factor in the last two must produce confusion of afferent stimuli out of accord with those produced by the toxic element, and in anæmia oxyhæmoglobin is, for a given volume of blood, deficient. Arterio-sclerosis is often associated with high tension, and the irregular plain muscle response due to impaired vessel walls not only leads to uneven cortical blood-supply, but also arouses a defensive emotion directly. A similar effect is produced by subtentorial new growths, especially at the cerebello-pontine angle, which not only increase intracranial pressure by obstructing the outflow of venous blood, but also bring about local anæmia. Valvular heart disease limits arterial flow and retards venous return, hence deficient oxidation.

Among the cases largely mechanical in causation the classical example is head injury, especially with fracture. Here the growth of scar tissue and thickening of membranes may upset the whole sympathetic mechanism for regulating intracranial tension and hopelessly bind down the vessels. It is well known that postural headache and vertigo persist indefinitely beyond the early concussion period, as in a case of gunshot wound from shrapnel in the Boer war 25 years ago. The man earned full wages as a bricklayer and mounted ladders freely; he had learned to disregard the vertigo which was still constantly present, for experience had taught him that he would never actually fall.

The above conception would appear to cover most of the conditions in which vertigo may appear, but whatever the associations, it arises only as an emotional outflow of instinctive fear. In the falling dream anxiety appears as a vestibular hallucination; the blood pressure rises as we awake, but the anxiety is adequately symbolised and vertigo is absent. If the symbolisation is imperfect, as in the fighting dream, foes may appear to dance round the patient on all sides, or he may imagine himself turning about rapidly and striking in all directions. On awaking such patients constantly complain that the room is turning round, and if they jump out of bed may fall to the ground.

Clinical and Laboratory Notes.

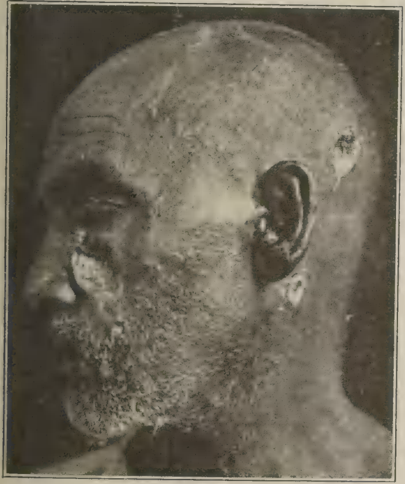
RHINOSPORIDIUM KINEALYI.

BY W. LEONARD FORSYTH, M.B., CH.B. GLASG.,
MAJOR, I.M.S.

(*From the Department of Pathology, Madras Medical College.*)

THE following case is of interest on account of its rarity.

FIG. 1.

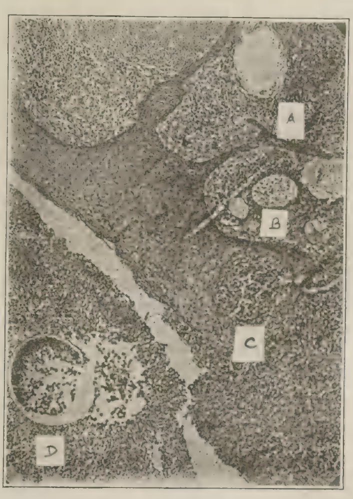


Showing suppurating growths of *Rhinosporidium kinealyi.*

M. H., aged 55, a resident of Calicut, on the West Coast of India, was admitted to the wards of the General Hospital, Madras, under the care of Major K. G. Pandalai on August 8th, 1923. Fifteen years ago patient had a small tumour in left nares which bled easily and freely—a feature of this disease. The growth persisted until three months before admission, when it spontaneously disappeared, and his nose is now free from obstruction. On the same side of the face, however, suppurating growths have appeared in the regions shown in Fig. 1. His left lacrymal sac is swollen, and probably harbours there also rhinosporidial infection. He had also a swelling under the palpebral conjunctiva of the left lower eyelid which has now healed.

Operation.—Excision of the papillomatous masses under local anæsthesia was performed by the surgeon and submitted for pathological report. The nature of the condition was not at operation suspected and the illustration shows only their site. Sections from all the areas (Fig. 2) show the parasite of rhinosporidium.

FIG. 2.



From microphotograph of a section. A, B, C, D are placed below foci of rhinosporidium.

In 1917 T. S. Tirumuti described in the *Practitioner* a series of cases, and Castellani in his Manual of Tropical Medicine mentions cutaneous surfaces, but does not quote any particular case, and so far as we are aware no case of rhinosporidium in a subcutaneous position has been previously reported in the Madras Presidency. The mode of infection by this sporidium still remains obscure, but it would appear possible that this individual auto-inoculated himself from his original nasal infection. No insect vector would appear to be necessary, and even in an original infection direct contact is suggested as a mode of spread.

THE SOURCE OF INFECTION WITH *HETEROPHYES HETEROPHYES* IN EGYPT.

BY M. KHALIL, M.D., PH.D., M.R.C.S. ENG.,
ASSISTANT DIRECTOR OF INVESTIGATION IN ANKYLOSTOMIASIS AND BILHARZIASIS IN EGYPT.

Heterophyes heterophyes (Siebold, 1852) is a trematode parasite in the intestinal tract of man, dog, and cat in Egypt. So far the life-history of this parasite and the source of infection are not known. It was, however, suspected that the second intermediate host would be found to be a fish, being a common food of the three definitive hosts. Examining the Egyptian mullet (*Mugil cephalus*), a trematode cyst was found amidst the muscle fibres of this fish in three out of eight fishes examined, the encysted cercaria being about 0·2 mm. in length. A study of the anatomy of the cercaria revealed the presence of a genital sucker lying close to the ventral sucker, a peculiarity of some members of the family *Heterophyidæ*.

A number of young kittens which harboured no heterophyes, as revealed by repeated examination of the fæces, were fed on the infested fish. After four hours cercariæ freed from their cysts were recovered from the small intestines. After 24 hours the parasites showed differentiation in the genital organs. In seven days many of the parasites, although smaller than normal, contained ova. Adult heterophyes of normal size were recovered on the fourteenth day.

These findings are interesting in being the first recorded example of a salt-water fish acting as a carrier of a parasite of man. So far search for intermediary hosts of human parasites has been confined to fresh-water fauna. The Egyptian mullet is found occasionally in the Nile, near its estuary, and the particular examples found infected were caught in the salt-water lake of Manzalah, near Port Said.

Heterophyes heterophyes infection causes dysenteric symptoms in man with occasional passage of blood and mucus. Experimental animals reveal inflammation of the mucous membrane of the small intestine.

The ovum of this parasite is one of the smallest found in human fæces, hence its presence is overlooked in a casual examination, and this may account for the small number of recorded cases of infection with heterophyes.

THE LATE DR. E. JACKSON.—By the passing of Edwin Jackson, M.R.C.S. Eng., J.P., at a ripe age at his home in Whalley Range, Manchester, on April 28th, his many patients have lost a wise and kindly counsellor, and the city one of its most diligent social workers. At the city police court, the stipendiary magistrate expressed his sincere regret and that of his colleagues, and tendered their deep sympathy with Dr. Jackson's relatives in their bereavement. A graduate of the University of London (1872) and Victoria University (1882), Dr. Jackson took the M.R.C.S. in 1876, after passing his medical studies in what was then the Royal School of Medicine in Manchester. He was for a time surgeon to the Manchester Day Nursery and Cottage Hospital, and a physician assistant at the Royal Infirmary. Dr. Jackson was deeply interested in the social, charitable, and religious work of the neighbourhood in which he practised, besides being a most industrious and efficient magistrate, and by his death the poor of his district have lost a valued and ever-ready friend.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF GYNÆCOLOGY AND OBSTETRICS.

A MEETING of this section was held on May 1st, Mr. T. G. STEVENS being in the chair.

Prof. LOUISE MCILROY read a preliminary communication, from herself and jointly with Miss D. L. LEVERKUS, entitled

Changes in the Polarity of the Fœtus during the Later Weeks of Pregnancy.

The authors said that the progress of antenatal work threw fresh light on abnormal fœtal presentations, and led to a questioning of the theories set forth in the books. The object of the present research was to ascertain the frequency of polar rotation of the fœtus in the uterus, and its influence on prognosis and treatment in obstetrical cases. There was a tendency for the fœtus to right itself to a cephalic presentation. The chief point concerned the changes from the cephalic and pelvic polar presentations, and the conclusion of the authors was that the chief factor influencing the persistence of pelvic polar presentations was extended legs; the lower limbs acted as a brace to prevent the natural curve of the spine taking place. If the spine of the fœtus was curved and the limbs were flexed, free rotation easily took place. In 22 pelvic polar deliveries it was found that extension of the legs had occurred in eight cases. The authors considered that the localisation of the fœtal heart sounds round the umbilicus was not a very reliable guide in diagnosis. Spontaneous version occurred so frequently that it was well to leave the fœtus to adjust itself in the earlier weeks, and as version usually took place between the twenty-eighth and the thirty-fourth week, no attempt at interference should be made before that time. If the pelvic presentation persisted in a primipara after the thirty-sixth week, version was advisable, as it might prevent complications at labour.

Dr. R. A. GIBBONS said that in many instances he had performed version externally after the fourth week before delivery. The important point which had been brought out was that these cases should not be interfered with until at least four weeks before full term.

Mr. EARDLEY HOLLAND agreed that extended legs caused much difficulty in the performance of artificial version, but said that the chief difficulty he had in external version was from the lower pole of the fœtus getting deeply into the pelvis. He always did external version whenever he found a breech, no matter what the pregnancy, with the reservation that if the external version was not very easy he did not persist; it was not worth while to do so until the thirty-sixth week. He had not known external version do harm; but in two cases in which external version had been performed successfully there was a small retro-placental hæmatoma.

Mr. A. W. BOURNE supported the authors' warning against too resolute attempts being made to turn the fœtus, because the placenta might thereby become separated. Also there was some danger of injury to the broad ligament. In doing external version the chief risk was of the engagement of the sharp wedge of the buttocks in cases of extended legs. At hospital the usual practice was to turn at about the thirty-sixth week. In about two-thirds of the cases in which attempts at version failed, spontaneous version occurred during the next two or three days.

Prof. MCILROY, in reply, said she had had no experience of harm or of hæmorrhage having occurred from forced version having been carried out, a practice she disapproved of. The shoulder of the fœtus might be rubbed against the edge of the placenta and an increasing hæmatoma result. Another important point was the risk of injury to pelvic veins. The external method of version alone was used by her.

Effect of Pregnancy on Renal Glycosuria.

Dr. **George Graham** described the case of a woman the subject of glycosuria who, after being under observation 13 years, became pregnant and was delivered of a healthy child. When taken into hospital she was passing 20 to 30 g. of sugar per diem, and the sugar concentration in the urine was 4 per cent. to 5 per cent. She was very drowsy, and her breath smelt strongly of acetone. After a stay of two months she was discharged as a case of diabetes mellitus, the outlook being grave. Two years later she was again taken into hospital, as, she having lived so long, her case was considered to be one of diabetes innocens. Under careful dieting her condition greatly improved. The baby was found not to be the subject of glycosuria. Dr. Graham said pregnant women were more liable to pass some sugar in the urine because the pressure in their kidneys was lower than in ordinary people. It was the presence of dextrose in the urine which rendered a case grave and demanded serious investigation.

Pregnancy Complicating Diabetes Treated with Insulin.

Dr. **Graham** also reported the case of a woman who had true diabetes and was treated with insulin throughout the period of gestation. The case was regarded as a grave one, because out of 66 such cases 27 were reported to have died either at the time of labour or within two weeks of delivery, while 23 per cent. died within the ensuing two years. The outlook of these patients had now been greatly improved by the use of insulin. Despite warnings and precautions, this woman became pregnant three weeks after the insulin was started. Two months later the sugar was 0·11 per cent., and later still it was increased to 0·19 per cent. At six months the question of terminating the pregnancy was discussed and negatived. The insulin dosage was increased, but the patient refused to take to her bed. The blood-sugar rose to 0·24 per cent., and the dose of insulin was increased to 15 units. The sugar then came down to 0·14 per cent., and the insulin dosage was reduced to 10 and 5 units after delivery, as the requirement of the body was then presumed to be less. The latest report was that the patient was definitely worse. Dr. Graham expressed his strong view that women with this disease should not become pregnant, as their resistance to infection was distinctly less than that of normal persons. He thought the reason women with diabetes mellitus who were pregnant died in coma was that they received a mild infection at the time of delivery. Insulin had been found to be excellent for any emergency operation.

Mr. **Bourne** spoke of a patient with true diabetes who, while under observation, had two children. During the first pregnancy she was treated with great care by dieting, &c., but had no insulin. At the thirty-sixth week labour was induced. She afterwards became very septic, but survived. Though strongly advised not to become pregnant again, she did so in six months. She was treated as before, again receiving no insulin. She did not lose weight. Cæsarean section was performed now in order to sterilise her, and she was fortified by being given a dose of insulin before the operation. Her puerperium was normal, and she expressed herself as feeling better than she had for some years.

Mr. **S. G. Luker** thought the outlook on these cases was unwarrantably grave.

Mr. **Holland** referred to a case which had true diabetic coma, and in the midst of the coma gave birth to a child at full term. Under treatment with insulin she did well, making an excellent recovery. On request, he sterilised her 18 months ago; she still had diabetes.

Presacral Tumours of Congenital Origin.

Mr. **Alexander Galletly** read a paper on a presacral tumour of congenital origin, with a case in which a cyst complicating pregnancy was removed by the abdomino-perineal route. The patient was a woman aged 43, who at the age of 13 had a swelling removed from the coccygeal region. At 32 years of age a similar swelling appeared in the same situation, and a second operation was carried out through the same incision. In 1920 she was delivered of a full-term living child, which was born without complications, though the perineum of the mother was badly torn. She had a second pregnancy in 1922, and then she noticed a swelling in the right buttock, which steadily increased in size. When eight months pregnant her doctor found that the fundus of the uterus had reached the infrasternal angle, and that the child's head was floating above the pelvic brim. By vaginal examination a cystic swelling could be felt. Cæsarean section was performed and a healthy living child delivered. At the operation it was seen that the retro-peritoneal cyst was firmly wedged in the pelvis. To obtain proper access to the cyst the uterus was removed, the cervix being left. The appendages on both sides were healthy. The cyst was tapped from above, and four pints of light brown fluid withdrawn. Three months later the patient was readmitted as the cyst had refilled. Mr. Victor Bonney operated under spinal and general anæsthesia, opening the abdomen by a sub-umbilical incision in the middle line. The bladder was raised, the rectum turned to the left side, the ureters isolated on each side, and the right internal iliac artery ligated in order to diminish the bleeding at the next stage of the operation. There were found to be several separate tumours each within a definite capsule. After removal of the cyst, a rubber drainage-tube was inserted and the gluteal incision closed. She now felt well and was doing her home duties.

Mr. **Victor Bonney** detailed the operation he performed in this case, remarking that endogenous teratomata were rarely present at birth, whereas the exogenous ones were always present at birth.

Mr. **A. C. Palmer** mentioned two presacral extra-peritoneal cysts which he had had to deal with in the last two years, not so large as in the case under discussion.

SECTION OF OTOLOGY.

A **meeting** of this section was held on May 3rd, Mr. **Sydney Scott**, the President, being in the chair.

Mr. **F. B. Gilhespy** read a paper on

Aural Surgery at a Fever Hospital.

He said that during the last few years otologists had been appointed to fever hospitals in increasing numbers and in some facilities for operations were provided. His own hospital had 500 beds, but a disadvantage was the fact that it was three miles from the centre of the city. He paid two visits each week, besides emergency calls. There were entirely separate divisions for diphtheria and scarlet fever. Most of the material was supplied by cases of suppurative otitis media in scarlet fever patients, though some cases of otorrhœa came from the diphtheria blocks. Each discharging ear case had treatment thrice daily, unless otherwise ordered. Reliance was placed on a thorough drying of the external auditory meatus and a cleansing of the external ear. When, last year, cases of impetigo developed in the ward, it was noted that the ears of the affected children showed great resistance to treatment, and since then each case had a separate gown and washing bowl provided. Ears might commence to discharge in the first week of scarlet fever, or this might not occur until the sixth or even the tenth week. If it occurred during the afebrile stage there seemed to be two modes of onset; one marked by an initial rise of temperature, often with pain, the other being painless and without any rise of temperature, so that the first indication was the finding of some discharge on the pillow in the morning. In the first type the rise of temperature might precede the discharge by a day or two, and if this danger-signal was appreciated, paracentesis could be performed in time. He emphasised the fact that the naso-pharynx was always primarily involved in scarlet fever, therefore at his hospital it was the custom to remove the adenoids if the ear discharge was not resolving. If the tonsils were found to be diseased they were removed at the same time. This could safely be done in the fourth week of an ordinary case of scarlet fever. In half of a series of 83 cases the adenoids alone were removed, and the results were equal to those in the cases from which the tonsils also were enucleated. The free bleeding following the adenoid operation relieved tubal congestion and hastened tympanic resolution in cases from which the amount of adenoid tissue removed was less than digital examination seemed to reveal. The average duration of the otorrhœa after the tonsils were removed was 15 days, a saving of a fortnight in comparison with cases treated in a special ear ward without operation. Each child received 2000 units of diphtheria antitoxin the day before the tonsil and adenoid operation, as a precaution against diphtheria, and, so far, no case had developed diphtheria after operation. Bleeding was stopped before the patient left the table, and no cases of delayed or secondary hæmorrhage had occurred. One child developed anterior poliomyelitis 16 days after the operation for tonsils and adenoids in the tenth week of the scarlet fever. Ionisation was of utility in helping to clear cavities remaining after mastoid operations, and in the conservative and radical operations which were needed. When cases entered the hospital with a history of chronic otorrhœa a few had been cured by the removal of adenoids. He had, previously to taking up this work, been impressed at a deaf and dumb institute by the number of children he saw deaf, presumably as a result of bad scarlet fever or measles in childhood. In three years at this fever hospital he had seen only one case in which the middle ear and the internal ear were attacked at the same time. That was a case of septic scarlet fever, in which facial paralysis developed within six hours of the onset of the discharge, and in a few days from the onset of the disease the child died. In these diseases the sinuses did not seem to be frequently at fault.

In conclusion, he pointed out the beneficial results from the early treatment of cases of scarlet fever otitis, for only when chronicity was established did the membrane tend to be widely destroyed. He thought arrangements ought to be made for dealing with cases of measles complicated by otorrhœa, for that disease occurred when the adenoids were at their most luxuriant growth, and timely treatment would probably prevent much wastage from ear disease in school and adult life.

Dr. Kerr Love agreed that there had recently emerged a more enlightened view in the profession as to the need for otologists in fever hospitals. Otologists in their ordinary work seldom saw cases of scarlet fever in the acute stage, while superintendents of fever hospitals seldom saw the end-results of suppurative otitis due to scarlet fever. No case of scarlet fever or measles suppuration in the ear should be allowed to leave the hospital until the discharge had ceased, even if it meant the performance of a mastoid operation, though this was only necessary when the condition existed before the patient came in.

Mr. T. B. Layton referred to the importance of following up scarlet fever and measles cases which suffered from otitis, in order to ascertain how much of the permanent ear trouble was due to those diseases, especially scarlet fever; also what was the possibility that the damaged ear—which clinically might be well on leaving the fever hospital—would be the site of a fresh micro-organismal invasion. It had been difficult to follow up the cases in London, because many of the children attended schools which were not under the London County Council. With regard to the performance of paracentesis, it was important to have an otologist easily accessible to do this at the moment the drumhead was ripe for it. In his experience, however, the operation was not always successful in stopping the discharge.

Mr. J. F. O'Malley said it would be important to know what was the incidence-rate of middle-ear suppuration in relation to the total number of scarlet fever admissions. Dr. F. F. Caiger (who was not an otologist) some years ago said that the incidence-rate was 15 per cent., and that it was greater from 3 to 10 years of age than at other ages. That led the speaker to think that adenoids was a large factor in the production of middle-ear infection, a view Mr. Gilhespy shared.

Sir James Dundas-Grant remarked that there was much to be said for the view that there were many cases in which the tonsils could advantageously be left while removing the adenoids. He had seen some cases of acute suppuration of the middle ear (not scarlatinal) in which the condition hung fire until the adenoids were removed, and improvement dated from that procedure. Out of 99 cases of scarlet fever in an epidemic among the patients without enlarged tonsils and adenoids the incidence-rate was 1 in 28, and among those with enlarged tonsils and adenoids it was 1 in 12. Removal of adenoids produced only slight shock compared with that from the tonsillar operation.

Mr. H. V. Forster asked whether in these cases of scarlet fever, measles, and diphtheria Mr. Gilhespy applied local treatment to the nose or throat—i.e., irrespective of whether or not they had ear trouble. He believed lavage and heavy spraying in a small child was a dangerous procedure, and that ear disease was liable to result. He always spared the tonsils if possible, as their removal was a grave operation in many of these children.

Dr. Albert A. Gray spoke of the work of Dr. W. T. Gardiner, of Edinburgh, who, in the presence of ear trouble, removed tonsils and adenoids at any stage of the disease, and with very good results.

The President pointed out that adenoids often seemed larger than they actually were because they were engorged with fluid. Usually he had removed adenoids at the time, and left the tonsils to be dealt with later. It was of no use dealing with the latter short of enucleation.

Mr. H. J. Banks-Davis said that if a child had an acute mastoid and at the operation on that adenoids were found, he removed them at the same time, always leaving the tonsils alone, especially as the raw surface left by removing them would provide a site for infection.

Dr. P. Watson-Williams asked the opener as to the use of an antiseptic spray in these cases, and advocated the spraying with collosol argentum, nearly pure, as a prophylactic measure. He agreed with the conservatism of sparing the tonsils wherever possible.

Mr. Musgrave Woodman asked as to measures for dealing with impetigo when it was met with. A case of the kind which occurred in his experience he cleaned out and scraped, but unsuccessfully. He agreed that if a mastoid operation was required, that was sufficient for the patient to stand; but often adenoids and tonsils were diseased together, and if the neck glands were enlarged removal of tonsils constituted an important factor in their subsidence.

Mr. Gilhespy, in reply, said he never removed tonsils or adenoids earlier than in the fourth week of the scarlet fever; mastoid disease had not developed before that stage. Discharge generally ceased as soon as the adenoids had been removed. He would not operate on a scarlet fever case in which the whole naso-pharynx was intensely congested. He could not give any indications for detecting when a tonsil was diseased. Once it had been diseased he thought its structure was so altered that it was never a normal body again, therefore at some time it should be removed. He believed the incidence of otitis in fever hospitals was correctly stated as 15 per cent., but he thought the figure was somewhat misleading, as the incidence of scarlet fever was greatest in the period 5 to 10 years, while that of measles was from birth to 5 years of age. No spraying of the nose was allowed by the medical superintendent; the nose was usually wiped out with antiseptics by means of cotton-wool.

Several otological cases were shown and discussed.

Reviews and Notices of Books.

PHARMACOPŒIAS OF THIRTY-ONE OF THE LONDON HOSPITALS.

Ninth edition. By PETER SQUIRE and PETER WYATT SQUIRE. London: J. and A. Churchill. 1924. Pp. 451. 12*s.* 6*d.*

SINCE the publication of the eighth edition of this well-known book of reference, the lamented death has occurred of Peter Wyatt Squire, and the present edition has been revised by W. S. Boyack, who assisted him in his editorial and compiling work for nearly 20 years. The book came into existence 60 years ago, when the first Peter Squire, being engaged in the preparation of the British Pharmacopœia, classified for his own convenience the formulæ used in the different London hospitals, to whose prescriptions he found reference was often necessary. He saw that such a classified collection of formulæ, some of the most valuable of which were not generally known, would be useful alike to medical men, pharmacologists, and pharmaceutists, and produced the first edition of this work with a success which has been steadily maintained. The last edition was published in 1910, and in our review of that issue the amount of revision that was then necessitated was indicated, for we noted that 26 of the London hospitals had produced new editions of their pharmacopœias within the preceding two years. The same need for careful revision is proved in this edition, for since 1910, 25 of the London hospitals have again re-issued their formulæ, making considerable alterations and adding many new recipes. We have now in this series a progressive history of pharmacy as conducted in 31 London hospitals, over a period of 60 years throughout which period the book has been a recognised work of reference to the medical profession.

In many of the hospital pharmacopœias whose contents have been abstracted the formulæ have been divided into sections representing the needs of the hospital generally, and the needs of the various departments; and where the departmental formulæ are given they are now specially indicated so as to distinguish them from the general hospital formulary. The prescriptions are arranged under the headings of the various preparations so that an immediate comparison may be made between the dosage and directions as they appear in the different institutions. There can be no question of the practical utility of a book which presents an exhaustive comparison of the pharmacopœias of the London hospitals, for in these institutions the formulæ will be selected for the best reasons which the knowledge of the day can furnish, while their selectors represent leading authorities on all therapeutic questions.

SOME GERMAN NEUROLOGY.

(1) DIE EXTRAPYRAMIDALEN ERKRANKUNGEN.

By Privatdozent Dr. A. JAKOB, Director of the Anatomical Laboratory of the Psychiatric Clinic in Hamburg. With 167 illustrations. Berlin: Julius Springer. 1923. Pp. 490. $7.20.

THIS is an excellent monograph. It contains a wonderful amount of personal material, including most varieties of the syndromes commonly considered "extrapyramidal," the value of which resides in the elaborate pathological examination appended to each case. As a result, we have in this book much less than usual of the unsatisfactory speculation as to site and degree of lesion which disfigures many purely clinical records. The chapters towards the close, on the pathophysiology of involuntary movement, will repay close study.

We consider that the immense attention given in the last decade to the corpus striatum has had one rather unfortunate sequela; the zeal of some investigators has outrun their discretion, notably in regard to schematisation of striatal syndromes. Dr. Jakob follows the Vogts too uncritically—though he provides an occasional welcome exception—as regards separate "striatal" and "pallidal" symptom-complexes, and as a consequence the reader will easily discover the mutually contradictory nature of not a few of the conclusions drawn. Dr. Jakob's own explanation of the pathogenesis of involuntary movement of the types of tremor and of choreo-athetosis is ingenious but incomplete, for it fails to take into adequate consideration the occurrence of these symptoms in cases where the lesions do not involve the mechanisms that he includes in his scheme. Further, he has not given any serious consideration to the Jacksonian dictum, that negative lesions cannot give rise to positive symptoms except by way of release of function. Of the erudition of the author, and his patient and painstaking examination of a wealth of pathological data, this monograph furnishes ample evidence.

(2) DAS MENSCHLICHE GEHIRN.

Fourth to eighth edition. By Dr. R. A. PFEIFER. With 111 illustrations. Leipzig: Wilhelm Engelmann. 1923. Pp. 157. 9 gold marks.

Dr. Pfeifer's book has reached a circulation, since its first appearance in 1911, of 10,000 copies apparently. It is a curious compilation. Since the presentation of the subject is "gemeinverständlich dargestellt," we can only suppose that the intelligent laity of different countries differ in what they are able to absorb or assimilate. Frankly, the work is a medley of anatomy, physiology, clinical neurology, neuropathology, and psychology, ranging from descriptions of cerebral cytoarchitectonic structure to discussions of the mirror-writing of Michael Angelo, and touching *en passant* on microcephaly, parapraxia, the localisation of the macular system in the calcarine area, and other topics that the professional reader might be forgiven for regarding as "caviare to the general." However, there it is. There are not a few matters of general neurological interest in the volume, but how far they can be appreciated by the non-technical student is an open question. The value of many of the illustrations would be enhanced if their background were white instead of black.

(3) DIE FUNKTIONEN DES STIRNHIRNS.

Ihre Pathologie und Psychologie. By ERICH FEUCHTWANGER, Munich. Berlin: Julius Springer. 1923. Pp. 194. $2.90.

THIS monograph is based on the examination of some 200 cases of frontal lobe lesions occurring in soldiers as the result of gunshot wounds. By way of useful comparison, 200 cases of gunshot wound of the head in which the frontal lobes were, as far as could be ascertained, definitely intact, have been selected for analysis on the lines utilised in the case of the frontal group. A number of special cases are chosen for detailed description. Material of this kind obviously is of much value for elucidation of the manifold problems presented by the subject of the functional significance of the frontal lobes. On general grounds, however, gunshot wound cases are not ideal, especially when the matter of commotio cerebralis is considered; the author has done his best to meet this criticism by the above-mentioned comparison, yet it is not thereby dispelled. We should have liked rather more information on the purely neurological side—e.g., in reference to reflexes—concerning which few details are vouchsafed the reader. By far the greater part of the book is taken up, as is natural, with the disorder of higher functions revealed in frontal lobe cases. Among the general conclusions derived from his study the author indicates that perception, memory, and thinking are less impaired than the functions on the affective side;

disturbances of mood and emotion are common, as is impairment of attention, of "seriousness," and of capacity for appreciating the æsthetic, ethical, and religious aspect of things. Notable interference with the "will-to-act" characterises many cases in the author's group; there is lack of spontaneity, aboulia; the "urge" to act fails; hence the condition often results in what the patient's friends indicate as a change in "character" and "temperament." How far such defects of function are localisable is matter for discussion. It is to be regretted that there appears to have been little systematic search for apraxic phenomena. Certain conclusions in reference to the association of the frontal lobes with the function of equilibrium seem to be open to another interpretation than that given by the author.

(4) The Nervous System.

Introduction to the Histology and Histopathology of the Nervous System. By Dr. Paul Schroder, Professor of Neurology and Psychiatry in Greifswald. Translated from the second revised German edition by Baldwin Lucke, M.D., Assistant Professor of Pathology, University of Pennsylvania; and Morton McCutcheon, M.D., Instructor in Pathology at the University. With 53 illustrations. London: J. B. Lippincott Company. 1924. Pp. 161. 15*s.*

As its name implies, this slender volume is no more than an introduction to a part only of neuropathology—viz., its histological side. It deals on general lines with the normal histology of the nervous system and the deviations from the normal seen in respect of nerve cells, fibres, glia, and mesodermal tissues. Controversial topics are largely avoided, the presentation being semi-dogmatic. Knowledge of these changes in nervous units is an essential preliminary to any study of neuropathology as a whole, and therefore a clear account of their nature will be found useful. Further details might have been furnished by the author in the matter of the plasma cell, the protagon granules of Reich, the multinucleation of cells (glial, Purkinje, &c.)—to mention only one or two points that suggest themselves. The book, nevertheless, conveys in small compass practical information that has often to be sought in individual monographs and scientific papers, and deserves a place on the bookshelf of the neuropathologist.

Intranasal Surgery.

By Fred J. Pratt, M.D., F.A.C.S., and John A. Pratt, M.D., F.A.C.S., Assistant Professors, Eye, Ear, Nose, and Throat Medical School, University of Minnesota. Philadelphia: F. A. Davis Company. 1924. Pp. 334. $5.00.

As far as surgical operations are concerned, the authors of this book have confined themselves very strictly to intranasal surgery. Except that of injection of paraffin into the bridge, no operations on the nose or its accessory cavities are described which involve any access to these regions other than through the nares. This limitation necessarily makes the account of the surgical treatment of many conditions very incomplete; it excludes, for instance, external operations on the maxillary antrum and frontal sinuses, and the surgery of the malignant neoplasms of the nose. In these circumstances it is a pity that any space has been wasted by including such a very inadequate account of malignant disease. Many conditions are mentioned, the treatment of which is only surgical to a very small extent; thus, atrophic rhinitis is accorded considerable space, but the only surgical treatment given is Beck's proposal to insert small splinters of bone under the septal mucous membrane, and no reference is made to the operations devised by Wittmaack, Lautenschläger or Hinsberg. On the other hand, many common intranasal procedures are not described in sufficient detail to be of use to the novice; the removal of polypi is not described at all, and the only reference to their treatment is that "once drainage is established and the discharge stopped, the polypi quickly disappear." Beside a method of intranasal exenteration of the ethmoid, the only operation discussed with full detail is that of resection of the septum, which occupies 50 pages, and is excellently written; the authors leave the greater part of the triangular cartilage to prevent "flapping," cutting it if necessary to make it lie straight. But we regret that they utter no warning against too indiscriminate operating on the septum. Some of their remarks are such as unintentionally to encourage the beginner in this direction; thus they state that "a deflected or thickened septum is probably the beginning of nearly all the troubles within the nose," and again, that most hay fever patients have deflected or thick septa, and that operative interference, to straighten up and thin the septum, together with establishing sinus drainage if necessary, will cure or greatly relieve many cases of hay fever. Undoubtedly, the cure of a definite or severe nasal obstruction will often relieve hay fever; but how often the resection of a slighter deflection or of a small spur fails to bring relief and how few septa are absolutely straight.

The book is profusely and well illustrated, and the anatomical plates are excellent.

Radium, X Rays and the Living Cell.

Second edition. By Hector A. Colwell, M.B. Lond., D.P.H. Oxon., Assistant Radiologist, King's College Hospital; and Sidney Russ, D.Sc. Lond., F.Inst.P., Joel Professor of Physics, Medical School, Middlesex Hospital; Fellow of University College, London. London: G. Bell and Sons, Ltd. 1924. Pp. 365. 21*s.*

The application of radium and X rays to biology is a matter of great theoretical and practical importance and of proportionate difficulty. As so often happens in the growth of a new science, the modest amount of exact knowledge which we possess has become diluted with so large a volume of imperfectly observed facts and ill-regulated experimental data that it is difficult for anyone but the expert to sift the grain from the chaff.

Dr. Colwell and Prof. Russ have come to the rescue, and in their excellent book have presented the accepted teaching with skill and fairness. This, the second edition, has been revised, and contains in a new chapter a summary of facts and theories which will be of particular interest to those working on the subject.

Clinical Diagnosis by Laboratory Methods.

Fifth edition. By James Campbell Todd, M.D., Professor of Clinical Pathology, School of Medicine, University of Colorado. London and Philadelphia: W. B. Saunders Company. 1923. Pp. 762. 28*s.*

Two qualities are demanded above all others of the compilers of manuals such as this: first, the power of clear expression, and secondly, that of discrimination. Nowadays a new volume of clinical pathology seems to blossom forth almost daily, and nowhere does the tree of knowledge produce them in more riotous profusion than in the United States. That Prof. Todd combines a singularly clear manner of expressing himself with a flair that amounts almost to genius for what to include and what to omit makes his work particularly noteworthy; it is already well known in this country, and the present edition will certainly add to its popularity. Much new material has been added, a certain amount has been judiciously eliminated, and the result is a thoroughly satisfactory manual.

The book includes within its scope all the departments of laboratory diagnosis, and that the author has been able to compass what he wished to say within the covers of a volume of such reasonable size and cost depends upon a remarkable judgment for what to omit. No methods of merely academic interest are included, but details are given of almost every technique of approved value. The section on bacteriological methods would have been more complete had the author included a few lines on the use of porcelain filters; the opacity tube method of standardising vaccines might certainly have received mention, and where so many other media are described it was a pity to omit a simple one, such as A. Fleming's, for growing the bacillus of Pfeiffer.

Prof. Todd describes himself as Professor of Clinical Pathology. This is a chair unknown to the seats of medical learning in this country, and it would probably be well that it should continue so; none the less, the schism of "clinical" pathology from the ordinary kind has some sort of justification if it can produce men who can write such useful books as this. The illustrations deserve special mention; the coloured plates are among the best ever produced in a book of this sort and reflect great credit upon the artist, Mr. John W. Rennell, and upon the engravers and printers.

AMBROISE PARÉ.

Selections from the Works of Ambroise Paré. With short Biography and Explanatory and Bibliographical Notes. By DOROTHEA WALEY SINGER. Medical Classics Series. London: John Bale, Sons, and Danielsson, Ltd. 1924. Pp. 246. 12*s.* 6*d.*

ALLOWING that there is a necessity for yet another book about Paré, there could not be a better volume than the one before us. Mrs. Singer has given us Book XI. from Johnson's translation of 1634, together with The Apologie and Voyages into Divers Places, and the Surgical Aphorisms and Rules. She herself has contributed a learned though readable introduction, together with many informing notes upon various statements in the text. Book XI. deals with the nature of gunshot wounds and with the treatment of the same, and draws a comparison between them and the effects of lightning. Paré also combats the popular opinion that gunshot wounds are poisoned. He gives sundry illustrative cases, amongst which the most remarkable is that of Philip de Croy (p. 117 et seq.). On p. 181 we meet with the word "bavin," which Mrs. Singer explains in a footnote as a faggot, and adds that the word was still in use in the nineteenth century. It is rare, however, and the best known instance is in Browning's grim poem, The Heretic's Tragedy, "Good sappy bavins that kindle forthwith." The Aphorisms are given in the original French together with Johnson's translation, which in one instance at least is wanting, for he translates—

> "De toute beste venimeuse
> La piqueure est fort dangereuse"

as "The wounds made by all venemous (*sic*) creatures are dangerous." A study of Mrs. Singer's excerpts ought to lead many readers to explore the original works of Paré.

PEDIATRIC NURSING: ITS PRINCIPLES AND PRACTICE.

By BESSIE INGERSOLL CUTLER, R.N., Instructor in Pediatric Nursing and Supervisor of Pediatric Department, University of Minnesota, Minneapolis. New York: The Macmillan Company. 1923. Pp. 478. 14*s.*

THIS volume, which the author claims is written primarily for the student nurse, seems to cover the whole subject of children's nursing most thoroughly. No claim is made to originality, and much is acknowledged to be borrowed from the text-books of well-know American authorities, numbers of references being given. All must warmly agree with the author's conviction that the main qualifications of a good pædiatric nurse must be a love for children and the ability to get on with mothers. Knowledge of the mental and physical hygiene of children, an acute power of observation, and a faithfulness to detail are essential but secondary. The chapter on growth and development is filled with useful information and statistics. The account of the general conduct of a hospital ward gives one an insight into the elaborate care devoted in the U.S.A. to the children's ward. Certainly, there are hospitals in the British Isles which embrace more than a part of the equipment and conveniences which the author regards as essential. Probably the most useful chapter is that on the care of the premature infant, and the nutrition of infants and children, with recipes for various modifications of food for infants, is well discussed. A chapter is devoted to the special nursing procedure required for certain diseases peculiar to infants and children. A number of surgical conditions are included. The nursing of infectious diseases and orthopædic cases is not omitted.

The book is likely to be widely read and appreciated in this country.

THE CARE AND CURE OF CRIPPLE CHILDREN.

By G. R. GIRDLESTONE, F.R.C.S. Eng., and Mrs. HEY GROVES. Bristol: John Wright and Sons, Ltd. 1924. Pp. 88. 2*s.* 6*d.*

IN the first part of this little work Mr. Girdlestone presents a description of the national scheme for the welfare of crippled children which has been evolved by the Central Committee for the Care of Cripples. In the labours of this body Mr. Girdlestone has taken a distinguished share, and in conjunction with Sir Robert Jones—who contributes an eloquent foreword to the book—he has on previous occasions outlined the essentials of an effective organisation for dealing with cripples. The scheme is based on the establishment in any given area of (1) a central "hospital school" of the open-air type, specially equipped for reconstructive surgery, where the child can be retained for long periods and receive both treatment and education; (2) a chain of after-care clinics in small centres in the area served by the hospital, which makes possible the regular supervision of all children who have been discharged. It must now be well known how efficiently this scheme is already working in Shropshire, where it was first inaugurated, and in Oxfordshire, Berkshire, and Buckinghamshire, under Mr. Girdleston himself. Part II., for which Mrs. Hey Groves is responsible, forms a year-book of hospital schools and other institutions dealing with crippled children, and represents a most useful compilation by an indefatigable worker in the cause of the crippled.

This book is a most important piece of propaganda on a subject which is admittedly of great national importance. It is certain to be read with pleasure by everyone already interested in the problem. We hope that it will find its way above all to the general practitioner of medicine, whose interest and coöperation are so urgently needed if this work is to go forward.

CLINIQUE MÉDICALE DE L'HÔPITAL BEAUJON.

By CH. ACHARD, Professor of Clinical Medicine in the Faculty of Medicine of Paris. Paris: Masson et Cie. 1923. Pp. 457. Fr.25.

THE clinical method, when all is said and done, will ever make its appeal to the medical man. Nothing can take the place of a clinical demonstration, conducted with insight, knowledge, and real acumen. The disadvantage of all books containing a clinical record, however, is that the reader may fail to recapture the elusive fascination attending the actual presentation of patients and the unravelling of a case before the eyes of the onlookers. Occasionally such books become positively tedious in their efforts to reproduce an "atmosphere" by literalness of transcription. Prof. Achard's compilation, we think, achieves a happy mean. Clinical presentations are brief and utilised mainly as an introduction to informative discussions of the points raised thereby. He shows himself a master of clinical medicine, and we are especially attracted by the able neurological essays dealing, inter alia, with diphtheritic paralysis, pontine paralyses, the hemianopias, certain complications of tabes, and dissociation of the oculo-sympathetic syndrome.

Reports and Analytical Records.

" MIRA " : HUNGARIAN MEDICINAL WATERS.

(MEDICINAL AND APERIENT WATER SPRINGS CO., LTD., BUDAPEST.)

THREE of these natural waters have been submitted to us for examination : " Mira " (1), a natural aperient water ; " Mira " (2), a natural medicinal water ; " Mira " (3) (Baby), a natural laxative water for children. When analysed we found these waters to have the following composition expressed in grammes of saline constituents per litre :—

—	Mira 1.	Mira 2.	Mira 3.
Total saline matter	55·11	23·9	14·8
Chlorine (Cl)..	2·34	2·62	2·52
Sulphuric acid (SO_3)	30·05	10·91	5·80
Lime (CaO)	0·50	0·70	0·34
Magnesia (MgO)	3·90	1·72	0·60
Soda (Na_2O)..	18·12	7·60	5·42
Silica (SiO_2)	0·10	0·20	0·12
Iron and alumina (Fe_2O_3 and Al_2O_3)	0·10	0·15	—
Potassium, lithium, strontium, &c. ..	Traces	Traces	Traces
Specific gravity (water = 1000) ..	1050·6	1020·88	1012·12

The above are probably combined as follows :—

—	Grains per gallon.		
	Mira 1.	Mira 2.	Mira 3.
Sulphate of sodium	2578·1	852·0	515·0
Sulphate of magnesium	817·2	361·2	124·0
Chloride of sodium	269·8	302·6	291·0
Sulphate of lime	85·7	71·4	57·0
Carbonate of lime	—	35·0	—
Silica	7·0	14·0	8·7
Iron and alumina	7·0	10·5	—

These analytical results show that the aperient water (No. 1) consists mainly of the sulphates of sodium and magnesium. It is well known that a water of this type is of general application in disorders of metabolism and elimination such as constipation, auto-intoxication arising from over-indulgence in rich foods, alcohol, &c., pyorrhœa of the gums, and a number of skin diseases, such as boils, nettle-rash, and eczema. The water is said to be mild and gentle in its action.

Mira (2), the Glauber salt medicinal water, is not so strong as No. 1 and, moreover, the ratio of magnesium sulphate to sodium sulphate is greater than in Mira (1). The action of this water is said to be milder than in Mira (1), and it is, in consequence, more adapted for chronic cases in which a prolonged course of the remedy is indicated. It is claimed that the water is suitable for the treatment of cases such as commonly resort to Carlsbad and Marienbad.

Mira (3) is a water in which the principal saline constituents are sulphate of sodium, chloride of sodium, and magnesium sulphate. The water is a useful laxative for children in cases where the ailments are connected with errors in diet. During dentition a few doses of this water relieve congestion of the gums, and in febrile conditions it may be used with advantage.

Our analyses are not in all respects in very close agreement with the figures quoted on the labels, but this is not to be wondered at as natural waters of high mineral content tend to vary somewhat in their concentrations from time to time.

(1) SACCHAROMYCIN ; (2) EVATMINE.

(BRITISH ORGANOTHERAPY CO., LTD., 22, GOLDEN-SQUARE, LONDON, W. 1.)

(1) Saccharomycin is described as an active isotonic and isothermal-living yeast for which the producers guarantee that its vitality will continue indefinitely and undiminished in the ampoules in which it is supplied. Preparations of yeast, it is well known, have yielded good results in staphylococcus infections, acne, and furunculosis, while a serum obtained from animals fed on enormous quantities of brewer's yeast has been used to introduce the active principle in concentrated form. In acne fresh brewer's yeast has been successfully employed, but the smell and taste of yeast, and its tendency to cause gastro-intestinal disturbances, such as diarrhœa and flatulence, have proved drawbacks to its use. It is claimed for saccharomycin that the disadvantages of brewer's yeast are avoided, while it is activated at body temperature and so is able to retain its potency. In cases of furunculosis and acne one ampoule of the preparation may be taken daily before breakfast accompanied by syrup and water, according to precise directions supplied. The price per box of 6 ampoules is 10*s.*

(2) Evatmine is compounded of the active extract of the posterior lobe of the pituitary ⅞ gr., adrenin solution (1 : 1000) 8 minims, physiological salt solution 8 minims, and has been used for some time both in this country and especially in France for the relief of asthma, and in the treatment of persistent cough, croup, and other spasmodic affections. While adrenin and pituitary extract, both of which have been used in these affections, have not been attended with consistent results, certain French observers state that a suitable combination of the two substances produce reliable effects. The quantity of pituitary extract in evatmine while sufficiently large to secure therapeutic action is so small that adverse reaction is unlikely or impossible, while the adrenin content of an ampoule of the compound is half the usual quantity of the drug administered as a dose. The preparation is administered by slow subcutaneous injection, it sometimes being necessary to give a second injection at an interval of half an hour ; in extreme cases a third injection may be made, but not more than three injections should be given over a period of 24 hours. As a prophylactic in asthma one injection is given daily or on alternate days for from two to four weeks. From one-half to one-eighth of the adult dose (1 ampoule) is given to children under 14 years of age according to the number of years. The price of a box of 6 ampoules each of 1 c.cm. is 12*s.* 6*d.*

The company's products are supplied to the medical profession, and are obtainable by the public only upon the presentation of duly signed prescriptions.

KALZANA.

(JAMES G. CLARK, 71, HIGH HOLBORN, LONDON, W.C. 1.)

This prescription, which is identical with albulactin, is made by Messrs. Wulfing and Co., of Amsterdam, and is put by the British agent on the London market in flasks of 75 tablets, each tablet containing 7½ gr. of calcium sodium lactate. The double salt is a standard preparation of calcium, and the combination is extremely soluble and easy of absorption. The therapeutic value of calcium is quite well known to all medical men, and both its chemistry and its chemical results have been demonstrated by sound authorities. Kalzana has been employed with good results in hospital and private practice, the claim being made that by its use calcium retention is effected by the addition of sodium lactate. The tablets may be taken in a little water or milk ; crushing with a spoon will hasten disintegration. They may also be simply masticated, and are best taken after meals. To small children and infants they should be given well powdered and dissolved in milk.

To obtain the benefit of the drug for purposes of ordinary nutrition one or two tablets can be taken daily, but the same dose or three tablets can be taken three times a day where a special addition of lime to the diet is required, as in the case of nursing mothers. Children subject to troubles of dentition attributable to a deficient amount of lime in their food may take one or two tablets daily.

THE LANCET.

LONDON: SATURDAY, MAY 10, 1924.

INFANTILE ATROPHY.

The problems of infantile atrophy form the subject of the Goulstonian Lectures delivered this year by Dr. Leonard G. Parsons, and published in recent issues of The Lancet, his final lecture appearing in another column. Although in his introductory address the lecturer described his subject as lacking in general interest, if not indeed threadbare, it is one which has exercised the minds of the public and the profession for so long, and its importance is so great both from private and national points of view, that many readers will welcome the admirable exposition which Dr. Parsons commences thus modestly. From the seventeenth century onwards the wasting diseases of children have produced a series of important studies by British physicians, often illuminating, but always inconclusive as regards the ultimate explanation of these phenomena. At the present time it is perhaps the work of the German school of pædiatrics, and particularly the views of Czerny and Finkelstein, which have chiefly influenced the profession. Czerny emphasised the view that wasting is a disturbance of growth and general nutritional function rather than a disease per se, and that it occurs in certain predisposed children when subjected to certain types of feeding or to infections, the children particularly predisposed being those whom he described as suffering from the "exudative diathesis." Amongst the immediate exciting causes he particularly stressed two: one in which overfeeding with milk led to an intolerance for fat, and a second in which excess of starch caused acid diarrhœa or carbohydrate œdema. Protein he considered relatively innocuous, thus adopting a view entirely opposed to those of earlier observers such as Biedert and Eustace Smith.

These theories, for it cannot be claimed that any exact scientific basis has yet been established for them, have certainly been useful in removing much prejudice, but they have more recently been supplanted in many minds by those of Finkelstein. Like Czerny, this observer considered fat and carbohydrate as factors of greater potential danger to the infant than protein can be, but he also proposed the theory that injury to the cells of the intestinal mucosa by the salts present in whey was of high importance, a theory which has been largely disproved by the subsequent work of Woodyatt and others. Classifying his cases according to the weight-chart of the infants, Finkelstein divided them first into those where there is excessive fat, producing disturbance of balance in the carbohydrate-fat ratio, and secondly those in whom carbohydrate-tolerance was slight. From one of these initial categories the wasting child was liable, if untreated, to pass into the more serious ones of (*a*) decomposition (marasmus), or (*b*) intoxication. From these suggestive theories the Goulstonian lecturer passes to a survey of the mass of biochemical research which has been carried out in this country and in the United States during the past few years. Reviewing the figures given by Hutchison, by Utheim, by Holt, and in his own extensive series, concerning the digestion and absorption of fat in wasting infants as measured by analysis of the fæces, Dr. Parsons reaches the important conclusion that digestion of fat is usually efficient, and, in the absence of diarrhœa, absorption of fat is satisfactory, the two conditions under which fat indigestion may become the cause of atrophy being (1) the development of diarrhœa, and (2) the giving of high fat-content dried milks. It will thus be seen that careful laboratory work in this country, as in the United States, has failed to support the supposed scientific basis of the theories of the German authorities. In his second lecture Dr. Parsons deals with other nutritional factors, many of which have as yet been very imperfectly studied. His remarks on the possible mechanism of the effects of vitamin deficiency are highly suggestive. Cramer, Lumière, Gross, and others have shown that when young animals are fed on diets deficient in vitamin A an acceleration of the passage of food through the alimentary canal occurs, and that this diarrhœa is accompanied and perhaps explained by an atrophic process affecting the intestinal mucous membrane. It may well be that herein lies the explanation of the pseudo-diarrhœa of many atrophic infants, and it is to be remembered that it is the animal whose diet contains excess of carbohydrate as well as deficiency of vitamin A which shows the most marked symptoms in these cases. In a later passage the lecturer wisely emphasises the importance in dietetics not only of the quantity, but of the quality of the protein food. Many writers upon the subject of infant-feeding, even at the present day, are prone to neglect the possibilities of errors arising from this cause. Protein is a loose term in contrast to such headings as carbohydrate and fat, for it is the amino-acids, derived from the native proteins, which are the ultimate units from which the body must build its tissues, and individual proteins differ considerably from one another in their content of various types of amino-acid. Thus Holt has shown that lactalbumin, which is present in human milk in far greater proportion than in cows' milk, is richer in leucin, lysin, and tryptophane than is casein, and it is readily conceivable that a diet rich in total protein may be actually deficient in one or other of these essential amino-acids. Again Moro, Bauer, and Lust have all shown that in certain infants there is an intolerance to cows' milk apparently due to the absorption of certain foreign peptones. On these grounds, and in the light of his personal experience, Dr. Parsons finds that the protein of the diet may be by no means so unimportant as the German workers have argued.

Clearly we are still far from reaching final knowledge concerning the causes of infantile wasting, but for the present the list given by Dr. Parsons is both of practical utility and in accord with the known scientific facts. He classes the causes as follows: (1) Insufficient food, with pyloric stenosis as an occasional causal agent; (2) unsuitable food—artificial foods with excesses or deficiencies of one or more factors being the common causes in this group; (3) diarrhœa and vomiting; (4) infections such as pyelitis and pneumonia; (5) unsuitable hygienic surroundings; and (6) pre-natal and constitutional causes. It may be said that in the vast majority of cases the cause is to be found in the early groups, and should usually be preventable. To what extent infantile pyloric stenosis is preventable remains an unanswered question. Dr. Parsons holds the view that these cases are truly a congenital disorder, but whilst the majority of observers incline to this opinion it is at present still an unproven conjecture. Happily, this uncertainty of ætiology is counterbalanced by a most pleasing improvement in the recent results of treatment, and Dr. Parsons's highly successful series of cases treated by Rammstedt's operation bears out the experience of many others; few cases could be more desperate than are many of these when first treated, and the brilliant results of the modern treatment are a further triumph for the abdominal surgeon. Post-operative treatment of these cases remains difficult, and Dr. Parsons has experienced the same dangerous tendency to diarrhœa in these infants that other observers have recorded. This he believes to be due to the failure of a starved intestine to deal with the newly arrived food-supply rather than to any pancreatic deficiency, its frequent occurrence, together with the long continuance of atrophy even after operation in other cases, being evidence of how slow and precarious may be the recovery of the organism from a nutritional disturbance, when such a disturbance has been present for some time. There comes, indeed, a point in all such cases where the general metabolic upset is so grave that it is doubtful whether its correction and the most careful after-treatment can possibly save the patient. It is the importance of early recognition followed by sane treatment that makes the study of this group of infantile diseases so useful both to the profession and the State.

THE ÆTIOLOGY OF CERTAIN LESIONS OF THE SKIN.

The appearance of a new edition of Dr. Darier's Précis[1] is an event of the highest importance in the dermatological world, for, since the first edition was published in 1908, the book has stood alone. The work of a master, it possesses an individuality and a charm that at once raises it above the level of other text-books of dermatology, and the reviewer has never forgotten the advice given to him many years ago by one of the wisest of English dermatologists—to buy the "Précis" and make it his bible. Those who are privileged to claim personal friendship with the author can readily understand wherein lies the virtue of his book. Other dermatologists have, perhaps, done more original work, but no one has a more profound knowledge of his subject or a greater breadth of view, and with these is combined a literary style of a high order. The arrangement of the subject-matter, which was adopted in the original edition, remains the same, and it could hardly be improved upon. The book is divided into two parts. In the first the various eruptions and non-eruptive abnormalities of the skin are considered according to their *morphology*, so that we have chapters on the erythemata, urticaria, eczema, erythrodermias, papular, nodular, vesicular, bullous, pustular, and ulcerative eruptions, dyschromias, atrophies, hypertrophies, and affections of the follicles, hair, nails, and sweat glands. In the second part the definite diseases of the skin are dealt with—"the morbid entities of known ætiology, classified according to the nature of their causation"—such as the dermatoses produced by external irritants and the drug eruptions, the parasitic diseases, the pyodermias, the bacillary and protozoal infections, and the dermatomycoses; in this part, too, are included the various tumours of the skin, and what Leredde has termed the "hæmatodermias"—i.e., the eruptions associated with the leukæmias, Hodgkin's disease, and mycosis fungoides. This arrangement is simple and logical, in marked contrast with the haphazard classification adopted in many text-books.

The modern dermatologists in France would seem to be almost obsessed by two infections—syphilis and tubercle—and the number of conditions which are ascribed by some of them to latent infection with one or other of these diseases is so great as to be almost ludicrous. Darier himself has recently deplored the tendency of his younger colleagues to concentrate their minds on syphilis to the exclusion of more strictly dermatological problems, but even he, we think, is inclined to exaggerate the importance of tubercle and syphilis and to under-estimate the influence of other chronic infections in the ætiology of eruptions of doubtful origin. This question arises chiefly in connexion with the rather heterogeneous group of eruptions which in 1896 Darier classed together under the term "tuberculides"; in this group he included lichen scrofulosorum, papulo-necrotic tuberculides (folliclis, acnitis, &c.), the various forms of sarcoid, lupus erythematosus and lupus pernio, and the erythema induratum of Bazin. Other authors have since, with little justification, attempted to enlarge the group by including such conditions as erythema multiforme, pityriasis rubra pilaris, the pityriasis rubra of Hebra and Jadassohn, angiokeratomata, and certain forms of parapsoriasis. On the other hand, it would appear from the work of Landouzy and others that erythema nodosum, though probably, as a rule, a manifestation of rheumatic or streptococcal infection, may be a true tuberculide. Moreover, the researches of Jadassohn and his pupils, and more recently of Bloch, have shown that in cases of deep trichophytosis there may occur a variety of toxic eruptions—trichophytides—which are morphologically similar to some of the above; they include a follicular eruption resembling lichen scrofulosorum or lichen spinulosus, an erythema scarlatiniforme, an erythema multiforme, and an erythema nodosum. With regard to lupus erythematosus, although a clinical association with active tuberculosis and the results of experimental animal inoculations point to it being in some cases a tuberculide, there is conclusive post-mortem and other evidence that it is not always so, and even folliclis and erythema induratum, though in many cases undoubtedly tuberculides, may, as the experimental observations of Guy would suggest, in certain patients be produced by embolism with organisms other than the tubercle bacillus. The question is reviewed and discussed by Darier, and he now proposes to substitute for the term "tuberculides" that of "tuberculoides," for he concludes that these eruptions represent a syndrome, which can arise from various causes, and that, although tuberculosis is the commonest ætiological factor, other infections, particularly syphilis, may give rise to them. He says that the work of Ravaut, Tzanck and Pelbois, and Pautrier, as well as his own observations, have proved beyond doubt that the complete clinical picture of the tuberculides can be produced by syphilis, and that in this case the Wassermann reaction is frequently positive and anti-syphilitic treatment has a remarkable therapeutic effect. This is particularly true in certain cases of hypodermic sarcoids, erythema induratum, disseminated nodular sarcoids, sarcoid of Boeck, papulo-necrotic tuberculides, and even of lupus erythematosus. Darier remarks in this connexion that an immediate differential diagnosis between lichen scrofulosorum and a follicular syphilide is often impossible.

With this attitude of mind many English dermatologists will find themselves in disagreement. Quite recently Dr. H. G. Adamson has argued that of the enormous number of different cutaneous eruptions that we recognise, each has its own distinctive features—for example, the morbilliform rash of measles, the rose spots of typhoid, the eruptions of scarlet fever, of chicken-pox, of secondary syphilis, of lichen planus, of pityriasis rosea, of psoriasis, &c. And he points out that when we *do* know the cause of a cutaneous eruption, which has its own individual character, we find it to be due to a specific causative agent, such as the typhoid bacillus, the tubercle bacillus, or the *Treponema pallidum*. Is it not therefore logical to suppose that in other equally distinctive eruptions there must be a specific causal organism for each one? Now this is a very suggestive argument and merits every consideration, but it seems to us that it may be pushed too far. No one can doubt that pityriasis rosea, for example, is a distinct entity due to infection with a specific organism as yet undiscovered. The same is true of the exanthemata, and probably of lichen planus. But certain eruptions, equally distinctive as regards their clinical appearances, are certainly not distinct entities from an ætiological standpoint. Urticaria and eczema, for example, may be due to a variety of causes both external and internal. Erythema nodosum, like erythema multiforme, with which it may be associated, is certainly in some cases due to infection with a streptococcus. Yet, as has been said, it would in others appear to be a tuberculide or a trichophytide. Again, it is difficult, in view of clinical and experimental evidence, to deny that lupus erythematosus is sometimes a tuberculide, but there is equally conclusive evidence that it may be a manifestation of acute or chronic streptococcal infection. It would also, we repeat, appear likely that the various papular and nodular necrotic lesions, which are in most cases rightly considered as tuberculides—i.e., inflammatory reactions around emboli of tubercle bacilli carried to the skin or subcutaneous tissue from some distant tuberculous focus—may also be provoked by emboli of other organisms. They occur only in persons of a definite type with a feeble peripheral circulation, and in these subjects there is no reason why a chronic bacteriæmia with any infective organism should not give rise to them.

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[1] Précis de Dermatologie. By J. Darier. Third edition. 1923. Paris: Masson et Cie. Pp. 996. Fr.50.

To sum up, although with Dr. Adamson we deplore the tendency manifest in some quarters to neglect accurate clinical and histological observation, and vaguely to ascribe widely different eruptions to latent syphilis, tubercle, or focal infection on quite insufficient grounds, there is no question that certain forms of eruption are merely cutaneous reactions which may be provoked by various infective organisms, and it is only by exhaustive investigation in each individual case that the actual cause of such an eruption can be determined.

VERTIGO AND FEAR.

An article by Dr. W. F. Menzies in our present issue, showing that what we call vertigo should be considered as a combination of physiological and psychological processes, opens up many vistas, like every approach to the problem of body and mind, and introduces a subject of immediate clinical interest. Of the five processes which he describes as resulting in vertigo, three—the peripheral stimulus, the vestibular stimulus, and the response from plain and striped muscle, are physiological; the next process—emotion, belongs more to the sphere of psychology, though the Lange-James theory expresses it in physiological terms, and the last—the realisation of the emotion in consciousness, is only expressible as a process of mind. Dr. Menzies is, perhaps, restricting himself to one part of a problem when he decides that emotion is excited in order that awareness of the danger of falling may be aroused in the organism, vertigo arising only as an emotional outflow of instinctive fear. That other bodily disturbances besides those causing vertigo can induce a state of fear is illustrated by Sir Clifford Allbutt's note in our issue of April 26th, in which he describes a sufferer from pulmonary thrombosis as having "the appealing look of a man in dread," though there was present neither pain nor dyspnœa. A process which resulted in fear was initiated by the physical condition, and one can conceive some of the concomitants of vertigo—the anxiety, nausea, sweating, chilliness, and final collapse—as likewise indicating the presence of fear rather than as part of the primary symptoms. But that the fear should be specifically related to the danger of falling does not seem so certain. Fear is not necessarily a concomitant of vertigo, and Dr. Menzies gives examples of vertigo without fear. That produced by inhaling the smoke of the morning cigarette is, we may assume, not unpleasingly fearful (it may be observed that a modicum of fear is to some people a desired sensation); the vertiginous bricklayer who freely mounted ladders had certainly divorced the emotion of fear from his subjective troubles. Children, moreover, find enjoyment in inducing vertigo, though many adults find anything but pleasant an attempt to return to the childish pleasure of the swing. Actual danger of falling is not often followed by the syndrome, and the beginner on horse or bicycle may be fearful in the extreme but experience no vertigo.

It appears that Dr. Menzies's separation of processes might be carried still further; on the one side are the stimulus and its perception qua stimulus, and on the other are the results of that perception showing themselves in many and varied unpleasing sensations with their bodily accompaniments; and this separation has its clinical counterpart inasmuch as one group may occur without the other. This leads us to the question of definition, and we are compelled to ask which of the groups is indicated by "vertigo." The same question presented itself to Bonnier, who wrote [1]: "One can say, it seems, quite safely, that vertigo seems to be a complex disturbance which appears on the occasion of a sensation or illusion of movement or falling; and inversely, when it appears for any cause whatever, it is accompanied, among other symptoms, by an illusory sensation of movement or falling." This suggested reversibility is shown in those nervous patients in whom vertigo accompanies or takes the place of an attack of pathological fear. Even in healthy people the vertigo that occurs on heights can hardly be expressed in any other sequence than one in which apperception of danger occupies the first place. Although Dr. Menzies compares his with the Lange-James theory, which, by the way, is far from generally accepted by psychologists, yet it must be noted that the latter theory does no more than express the mode in which the apperception of danger produces those bodily changes upon which the emotion depends. A child on a railway track may perceive an approaching train without any Lange-James reaction if the danger is not recognised. In such a case as that described by Sir Clifford Allbutt the gross pathological state may well have induced a sense of impending disaster which in its turn set up the train of bodily changes resulting in the emotional state of the patient; and this sequence differs from that postulated by Dr. Menzies, in which conscious realisation comes last. It is an extension of the theory to assume that, in the absence of a mental stimulus except as an end-result, bodily processes of themselves can induce a specific emotion. Dr. MENZIES describes a defensive emotion, with adrenalin outflow and the rest, which is registered in the thalamus and thereafter conveyed to the cortex, but in the classical experiments of CANNON and CRILE the cortical stimulus, the apperception of danger, preceded the adrenalin outflow. Whether this reaction is reversible is a matter of clinical importance, and the way in which it is regarded rather sharply separates the school which seeks the explanation of pathological fears primarily in mental processes and that which sees their origin in physical disturbances in which the endocrine organs are probably concerned. Dr. MENZIES has succeeded in raising a problem of considerable interest.

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[1] Le Vertige, Paris, 1904, p. 31.

ISOLATION OF THE VIRUS OF FOOT-AND-MOUTH DISEASE.

A RARE example of a reward for steadfast concentration on one problem by one man is to hand in the news that the virus of foot-and-mouth disease has at last been isolated by Prof. Paul Frosch, Professor of Dietetics and Bacteriology in the Königliche Tierärztliche Hochschule in Berlin, working in conjunction with Prof. Dahmer. More than 20 years ago Frosch, working with Loeffler,[1] discovered that a filtrable virus was responsible for foot-and-mouth disease. Frosch has worked at this subject with persistent diligence ever since, and at a meeting of the Berlin Micro-Biological Society on April 7th he was enabled to announce the discovery of a tiny bacillus which he has isolated and from which, we understand, he has been able to reproduce the disease after 13 subcultures. The organism is only 0·1 micron long in its longer axis. It forms minute colonies, on a suitable solid medium, of the diameter of a red blood corpuscle—that is, 7 to 8 microns. This bacillus the two workers generously propose to name *Loeffleria nevermanni*. Prof. Dahmer described at the same meeting how he succeeded in separating the organism from the fluid of the vesicles and in developing a colony on a solid medium. From these colonies the two workers succeeded in making subcultures with which they inoculated a series of guinea-pigs. The guinea-pigs acquired an immunity which was demonstrated in that, after inoculation, the animals showed no generalised foot-and-mouth disease when subsequently infected with virulent material, though the primary vesicles appeared. These experiments were carefully controlled. From the vesicles of these culture-infected guinea-pigs the organism could be further subcultured. From the experiments it was concluded that guinea-pigs infected with culture material were protected from a generalised disease on subsequent reinfection. The principle of the methods whereby what appears to be a very fine piece of research was achieved bears a curious resemblance to that which gave us insulin. In both cases the problem was that of getting rid of a substance which had a destructive effect on the material to be isolated. It has long been known that the fluid from the vesicles of infected animals is extremely infective on the first day, considerably less so on the second, and that on the third day its potency appears to be lost. Similarly, if an attempt be made to cultivate this fluid, its infectivity diminishes rapidly. The difficulty was to devise some means of getting rid of the unknown substance which kills off the virus. Frosch apparently took the vesicular fluid and filtered it through a collodion filter, and then was able to wash the organism off this filter and grow it, but the actual technique of the culture process has not at present been disclosed. The investigators are taking steps to have their work confirmed at the Department of Health and at the Robert Koch Institute. The economic value of this discovery, if, as seems likely, it will be confirmed by subsequent workers, will be really immense. We await further information on the subject with the keenest interest.

Annotations.

"Ne quid nimis."

UNLIMITED INDEMNITY.

THE following letter has been sent to all registered medical practitioners in England, Wales, Scotland, and Ireland by the two great Defence and Protection Societies, and, it will be seen, that these bodies have now decided to offer an unlimited indemnity to their members who may be mulcted in legal damages:—

30th April, 1924.

DEAR SIR OR MADAM,—Recent events have emphasised the extreme importance of every member of the profession being adequately protected in the performance of his duties.

Medical practitioners are reminded of the advantages attaching to membership of one or other of the above-named societies. Members of either body have the benefit of having their cases considered by an experienced council, as well as of being advised both generally and legally on all matters connected with the practice of their profession. Many claims are immediately withdrawn when it becomes known that the practitioner concerned is a member of one or other society. Every day the secretaries of the two societies are engaged in giving advice to their members without expense beyond their annual subscription.

Members of these societies are not only entitled to ask for assistance in the defence of actions brought against them, but the societies frequently institute actions for the protection of the interests and professional reputation of members.

The councils of the two societies have now decided to afford their members unlimited indemnity against damages and costs of the other side on the same conditions as at present prevail.

Yours faithfully,

Signed on behalf of the
Medical Defence Union, Ltd.,
WALTER G. SPENCER,
President.
SEYMOUR TAYLOR,
Treasurer.
JAMES NEAL, General
Secretary.

Signed on behalf of the
London and Counties Medical
Protection Society, Ltd.,
JOHN ROSE BRADFORD,
President.
CHARLES M. FEGEN, Treasurer
and Chairman of Council.
HUGH WOODS, General
Secretary.

Although this action is obviously a result of the Harnett case, still under adjudication upon appeal, it may be said that hitherto the limit fixed by the Societies concerned has been well outside the amount of any indemnity required and that the ideal of putting no limit to the indemnity has always been aimed at.

THE INDIAN (SUBORDINATE) MEDICAL DEPARTMENT.

WE are informed that meetings of the domiciled European community in India are being held to protest against the circular issued by Indian Army Headquarters regarding the reduction or abolition of the Indian Medical Department, and the Anglo-Indian Association, London, has taken the matter up by requesting the Secretary of State for India, Lord Olivier, to hold an official inquiry on which the Anglo-Indian and domiciled European community should be represented. This department was originally intended to be recruited from the sons of persons of pure or mixed European blood and has had a long and useful career. Its members were originally styled apothecaries and the department afterwards included the hospital assistants. The former were employed with British troops and the latter with Indian units. Something more than a quarter of a century ago the apothecaries were given the title of assistant surgeon and a decade or so later the hospital assistants obtained the title of subassistant surgeon.

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[1] Report of the Commission for Investigation of Foot-and-Mouth Disease at the Institute for Infectious Diseases, Berlin. See Jour. of Comp. Pathol., 1899, xii., p. 79.

Later still the department—long styled the Indian *Subordinate* Medical Department—lost the objectionable word subordinate, and now, it seems, the department is to go altogether. The assistant surgeons performed the duties of orderly medical officers in British hospitals and carried out not only the duties of wardmasters and dispensers, but many of the less important medical functions of junior officers and all the duties of quartermasters of the R.A.M.C. It is difficult to see how the abolition of the department will effect economy, as in addition to their military duties assistant surgeons were recruited for many civil appointments, while a few obtained British qualifications and entered the Indian Medical Service. Sir Patrick Hehir started his distinguished career in the ranks of the old I.S.M.D.

A MATTER OF TASTE.

OUR attention has been drawn to a signed article in a daily paper entitled "A Parliament of Neurasthenics," wherein a Medical M.P. discusses the alleged nervous condition of his colleagues. He deduces from such mannerisms, neuro-muscular symptoms and vaso-motor instability as his trained observation of Members has detected that many of his colleagues suffer from neurasthenia in some form. With the accuracy of his pathological interpretation of characteristic movements and manners we are not concerned, although it is natural that in legislators dealing with affairs of great moment outward signs should appear of the inward conflict. It has, however, been suggested to us that members of the medical profession would be wise to be at least as discreet in their observations in the House as they would be in a friend's drawing-room. Articles from a tailor who happens to be a Member of Parliament, criticising the cut, materials, and degree of seniority of the clothes of his neighbours, would be open to a charge of bad taste, and it is doubtful whether the estimation of the extent of mental and physical deficiencies on the part of a medical Member is in better taste. Doctors in Parliament have certain privileges granted to them on account of their professional status and ethic which it would be a pity to forfeit.

THE CORRECTION OF SPEECH DEFECTS.

AFFECTIONS of speech, complicating the apparatus concerned in the production of a normal voice, are so various and frequent that, until recently, it has been something of a reproach to the medical profession that facilities for dealing with them have not been more adequately provided. Twenty years ago the routine treatment of functional aphonia was to stimulate the larynx by the internal or external application of the faradic current, or by painting the glottis with a solution of chloride of zinc or some other irritating solution. This often succeeded in restoring the voice for a time, but the aphonia usually soon returned, and with each relapse treatment became more uncertain and the patient more despondent. The modern method consists in obtaining the coöperation of the patient, and in educating him in the proper use of the various groups of muscles concerned, when the result is usually a lasting cure. So, also, many cases of chronic laryngitis and pharyngitis, which are maintained in a vicious circle by improper and excessive use of some of the muscles of voice-production, are amenable to treatment by vocal education. Stammering, as is well known, is curable by similar methods. In addition to these and similar functional disturbances, defects of speech due to physical causes can be greatly improved by educative treatment; such are cleft palate, speech affections due to hemiplegia and to operations about the larynx and pharynx, while the defective speech which results from severe deafness can also be bettered by similar methods. It is, therefore, all to the good that this has now been recognised, and that the speech clinic which has been working at St. Bartholomew's for the last 13 years has now its counterparts at Guy's, St. Thomas's, Great Ormond-street, and the Royal Dental Hospital —we are not sure that the enumeration is complete. There is also a strong medical element in the administration of the Vocal Therapy Fund, which was founded for the restoration of health through speech, song, and correct breathing. Sir Bryan Donkin is chairman of this Fund, and other medical names on the committee are those of Dr. M. Flack, Sir J. Dundas-Grant, Sir Frederick Mott, Dr. C. S. Myers, F.R.S., and Dr. Jane Walker.

THE ARGYLL ROBERTSON PUPIL IN NON-SYPHILITIC CASES.

SPEAKING in the discussion on the Physiology and Pathology of the Pupil Reactions at the Annual Congress of the Ophthalmological Society of the United Kingdom, reported on p. 968, Mr. R. Foster Moore opened up a most important and interesting question —namely, the value of the Argyll Robertson pupil as an indication of past syphilitic infection. We have become so apt to associate this phenomenon invariably with tabes or general paralysis, that it is slightly disconcerting to read Mr. Foster Moore's series of cases in which it occurred apart from any other demonstrable lesion of the central nervous system, and without any possibility of the presence of syphilis. It is true that such cases show slight differences from the typical Argyll Robertson reaction, but these may be difficult to elicit. The most important points to note are, firstly, that what we may call the "false Argyll Robertson" pupil may be present from birth onwards and may be unilateral. Again, in all the cases, the reaction to accommodation, though present, was very sluggish, the accommodative power, however, remaining normal. The whole question is most important and calls for a much fuller investigation of the causes of the true Argyll Robertson pupil. We do not yet know either the actual cause of this or the anatomical site of the lesion, nor is opinion yet unanimous even on the subject of the central paths of the normal pupil reactions. There is a vast field for research here still, and it is to be hoped that neurologists and ophthalmologists will turn their attention anew to the subject of the central connexions of the visual tracts.

MALTA FEVER IN AZERBAIJAN.

RUSSIA has recently been the prey of terrible epidemics, from which nothing can save the country except consistent hygienic administration informed by scientific work. A recent article [1] from the bacteriological laboratory of the State University at Baku is an example of such work. Dr. P. Sdrodovski gives an account of the very thorough investigation he made when he diagnosed a hitherto unrecognised case to be Malta fever, a disease never recognised before in Azerbaijan. The patient, a lady, had been ill for two months with persistent irregular pyrexia, headache, pains in the joints, sweating, and loss of weight. Her spleen and liver were enlarged; she had leucopenia and monocytosis. In September blood culture showed a micrococcus closely resembling *Micrococcus melitensis*, agglutinated by the serum of the patient in a dilution of 1 : 1000. It was found that the patient's mother was also suffering from a similar attack (at first thought to be malaria), and her blood agglutinated this micrococcus (1 : 500). They had become ill almost simultaneously on leaving Perebedil (a village in the Eastern Caucasus a hundred miles from Baku), where they had spent May and June, and where both had drunk much raw goats' milk. At the end of September an expedition to Perebedil was organised to clear up the epidemiology of the disease. The blood of 30 natives with pyrexia was examined, and two (only) were found to agglutinate the micrococcus—one (the owner of the goats, with persisting fever and pains in the ribs) in 1 : 2000; the other (his brother, with persisting fever and swelling of a knee), in 1 : 500. Six of the milch goats were examined; the blood of two gave positive results (1 : 200, 1 : 1500); both looked healthy, the second, in December, was found to have a swelling in the knee-joint of a foreleg. Two other cases were subsequently found in Baku, unrelated in any discoverable way to the others or to Perebedil, which is not, therefore, the only centre of the disease in the country. The organism found was pathogenic to rabbits, 3 of 10 died; of rats, 7 of 10; of mice, 3 of 4 died within three days, and it was deadly for guinea-pigs. Post mortem it was recovered from the spleen and other organs in pure culture. Rabbits showed high agglutination (1 : 10,000) but, like goats, showed no characteristic symptom if the case became chronic. One hundred and fifty other pyrexial cases in Baku were examined, but no other gave agglutination at 1 : 100 dilution. The rabbit serum sent by Dr. Sdrodovski to Hamburg agglutinated standard cultures of *M. melitensis* there up to 1 : 3200, normal rabbit serum being negative.

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[1] Archiv für Schiffs- und Tropen-Hygiene, xxviii., 1.

THE LIMITATIONS OF CHEMICAL ANALYSIS.

THE necessity for rigorous biological testing of drugs such as pituitary extract, insulin, and salvarsan, which has given occasion for a Therapeutic Substances Bill, draws attention to the limitations of purely chemical testing and standardisation in the case of complex drugs of unknown chemical nature. In dealing with pure chemical compounds of known constitution, chemical methods of testing are generally quite sufficient and satisfactory as well as being usually more rapid and simple to carry out than biological tests. But in cases such as pituitary extract and insulin where the chemical nature of the active principle is quite unknown, biological methods are absolutely necessary. In other cases, such as ergot, where several active principles have been isolated and their chemical constitution accurately established, biological methods of testing are still advisable, as no simple satisfactory chemical tests are available for the amount and purity of the chemical components. Salvarsan, on the other hand, is usually regarded as a single pure chemical compound, but it is extremely doubtful whether the ordinary technical product is ever the pure substance represented by the formula assigned to salvarsan. Even if it were, this substance undergoes oxidation so readily that the need for careful testing and control is at once revealed.

The limitations of chemical analysis are rarely sufficiently appreciated by the layman. The analyst is frequently requested to find out the detailed composition of a complex mixture of ill-defined organic substances by "analysing" it, as though there were a standard routine method available by which all the components of any material could be determined. One reason for this confusion of thought is to be found in the difference between inorganic and organic analysis. With sufficient skill, care, and patience it is usually possible to ascertain accurately the composition of any inorganic mixture, but the majority of substances dealt with in everyday life are mixtures of a large number of organic compounds, usually of complex and little known chemical nature. It is no disparagement of the skill and science of analytical chemists to say that accurate analysis of such mixtures is impossible. Indeed, it is remarkable with what skill chemists have devised methods and tests to enable them to find out a very great deal of the nature of the complex materials presented to them. Nevertheless, many of these tests are to some extent empirical and depend for their utility largely on being carried out in a standard manner.

The need for standardisation of analytical processes, especially in dealing with organic substances such as foods and drugs, is vigorously set out in a recent paper by Mr. M. S. Salamon, which appears in the current issue of the *Analyst*. Examples were given during the discussion at the Society of Analysts which ensued on the reading of this paper. For instance, a sample of dried milk was investigated by different analysts, of whom two found 40·6 per cent. and 40·7 per cent. of lactose, whilst a third, using a different method from the other two, found only 38·6 per cent. The last-named method by a different process of calculation gives 40·6 per cent. of lactose, and it certainly seems desirable that the methods should be standardised sufficiently to avoid such large discrepancies in a comparatively simple estimation. Still more unsettling is the statement that the percentage of lactose given in an analytical report sometimes refers to the anhydrous substance and sometimes to the hydrate. In this case a definite convention should certainly be established. In the estimation of fats in milk and dried milk, some methods give consistently lower results than others, though in this case the difference is not usually so large as in the case of lactose. Even if a standard process for the estimation of fats be not agreed upon, it is desirable that the process used should always be stated so that it may be seen if results are strictly comparable. Different results are given by the various methods of determining phenols and aldehydes in essential oils; even in the case of inorganic materials the results may depend to some extent on the nature of the process. Imperfections such as these do not discredit chemical analysis; the limitations of analysis, however, should be borne in mind, and it should not be expected to accomplish the impossible.

TREATMENT OF PERNICIOUS ANÆMIA BY EXCAVATING THE BONE-MARROW.

THE bone-marrow, as well as the spleen, showing certain definite changes in pernicious anæmia, it is natural that the occasional successes following splenectomy for this disease should suggest the idea of removing the bone-marrow from the long bones. Recently this idea has materialised in Berlin, where Prof. Walterhöfer and Dr. Schramm have already operated on as many as 23 cases of pernicious anæmia during a period of little more than two years. Their achievements are so promising that they have already extended their indications for this operation, which was at first attempted only in those cases in which other older methods had failed. In a recent publication [1] they refer only briefly to the technique,[2] stating that at the suggestion of Prof. Bier they have substituted irrigations of the long bones for their original scraping operation, a current of fluid being passed through small holes bored in the tibiæ. It was noted with surprise that even almost moribund patients tolerated this operation well, and it was found feasible to evacuate the marrow of several long bones at a single operation. As good results were obtained in 48 per cent. of the cases which had been refractory to other treatment, it is claimed that the improvement effected could not be dismissed as a mere coincidence. Pernicious anæmia is notorious for its capriciousness, remissions often occurring unexpectedly and lasting a considerable time. But as the improvement observed in many of the 23 cases occurred directly after the operation, the authors dismiss as improbable the explanation that they were dealing with coincidences, and they believe that their procedure has already earned a noteworthy place in the treatment of pernicious anæmia. They have accordingly extended their indications for this treatment, which they sometimes vary with other treatments, such as arsenic medication and blood or serum transfusion. In support of this variation of treatment, they suggest that bone-marrow evacuation is but one of many means by which the regenerative processes in the body can be stimulated, and that varying the stimuli from time to time is all to the good. In cases coming to necropsy it was found that extensive regeneration of the evacuated bone-marrow had taken place, leucocytes and erythrocytes in all stages of their development being found in the new marrow. The regeneration of fat in the marrow was comparatively slight. Even when the disease steadily progressed, and the patient died, it was found that faultless regeneration of the marrow had taken place. The operation does not seem to be very dangerous, but of the durability of its achievements there must still be doubts.

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[1] Acta Medica Scandinavica, 1924, lx., 196.

[2] The technique of the operation was originally described in Archiv für klinische Chirurgie, Bd. cxviii., 1921.

THE PRESENT EPIDEMIC OF LETHARGIC ENCEPHALITIS.

The anticipations of the Ministry of Health in 1919 that epidemic encephalitis was likely in the future to manifest its activities in wider epidemic form appear to be only too truly realised. The seasonal incidence of encephalitis in England and Wales has been unduly high, the number of cases of the disease notified since the beginning of the year being 1612, compared with 1025 during the whole of 1923, 454 in 1922, 1470 in 1921, 890 in 1920, and 541 in 1919. In all other European countries, as well as in the United States of America, the first quarter of 1924 has shown improvement on the corresponding quarter of 1923. The returns for the week ending April 26th now show a decline in the number of notifications for England and Wales from 253 to 210. The fall has been marked in the chief centres of infection: Sheffield returns 26 cases as against 41 in the preceding week, Birmingham 17 as against 29, Newcastle 3 as against 7, and Bristol 8 as against 13. There have also been an appreciable number of sporadic cases in rural and outlying districts. In Liverpool and Sheffield several examples of multiple cases in households have occurred and the recognition of mild or abortive cases, characterised by transient palsies, stiffness of the neck muscles, febrile attacks, sore throats, or mild catarrhs is seen to be of importance in tracing the paths of case-to-case infection. On the whole, the clinical type of case seen in the present outbreak appears to be of a relatively mild degree of severity. In Sheffield out of 163 cases notified since March 10th, 20 deaths have occurred. In many instances the prodromal period of infection appears to be over the usual seven days. Many patients have a febrile onset often ascribed to "influenza," and a fortnight or more elapses before the definite signs of encephalitis are manifest. Whilst a proportion of cases can be classed as the original oculo-lethargic type or present the Parkinsonian phenomena seen in 1918, it is noteworthy that many of the cases show myoclonic movements and that fibrillary twitchings of the abdominal muscles are also common. Cortical affections are more frequently seen than in previous outbreaks; these are characterised by epileptiform convulsions sometimes associated with maniacal outbursts or insomnia. Catalepsy is rare in the present outbreak. Some patients make an unusually rapid recovery.

THE ATTEMPT TO ASSESS PHYSICAL FITNESS.

The results of certain investigations conducted during the war gave rise to the hope that by an appropriate treatment of measurements long familiar to physical anthropologists and physicians (measurement of body dimensions and of vital capacity) it might be possible to obtain simple and widely applicable methods of assessing physical condition. The Medical Research Council have collected then and since much data with the object of throwing light on this point, and though the whole of this material has not yet been analysed, a sufficiently large sample has given negative results. Inquiry as to whether any other less familiar system of measurements or tests might serve to found a rational and accurate mode of judging goodness or badness of physique has led to equally disappointing results. It seems now to be established on grounds of an analysis of measurements of young adult males,[1] in adult women,[2] and schoolboys,[3] of various ages and social class (Mumford and Young) that the inherent variability of vital capacity within homogeneous groups of apparently healthy persons is so great that inference from deviations above or below the normal of a particular combination of measurements will rarely be of service in the assessment of individual cases. In the most recent of the special report series issued by the Medical Research Council Dr. Lucy Cripps has applied to young women engaged in widely different occupations Group Captain Martin Flack's tests for physical efficiency in airmen. Her study has not resulted in the discovery of any simple or generally valid relationships. She is careful to point out that these negative findings do not detract from the value of these tests for the particular purpose for which they were devised and are used—that is, to ascertain fitness for flying. Certain side-issues of the inquiry are of interest. For example, the women subjected to the tests included 115 students at Bedford College, 241 students at a physical-training school, and 125 civil servants. Of the third-named group all, of the first many, and of the second none habitually wore corsets. The conclusion reached confirmed that of other modern observers, that the costal type of breathing at one time thought to be characteristic of women is due only to constriction of dress and that there is no essential difference in the mechanism of respiration in men and women. Another interesting fact is that among students at the physical-training college in three of the tests—vital capacity, breath-holding, and the fatigue tests—those students who have had a longer training show on the whole worse results than those in the earlier stages of training. The suggestion is that these girls may be overtrained in their third year. In connexion with this report the results recorded by Burgess Gordon, S. A. Levine, and A. Wilmaers in the current *Archives of Internal Medicine* on the vital capacity of a group of Marathon runners is of interest; their vital capacities varied a great deal from below to above normal and bore no important relation to the order in which they finished.

TUTOCAIN.

The German firm of Bayer, who introduced the substance "205" as a means of treating trypanosomiasis, have now produced a new local anæsthetic known as tutocain. It is a substance of the novocaine type, and a derivative of α-γ-amino-alcohol; it contains two asymmetric carbon atoms, but is nevertheless a racemic combination. It is very soluble and can be sterilised by boiling for a short period without undergoing decomposition. Its pharmacological properties have been described by Schulemann,[4] who states that tests on the eye of the rabbit show that a solution of ⅛ per cent. strength is potent enough to produce anæsthesia, while the lowest concentrations of novocaine and cocaine able to do so are 2 per cent. and 1/20 per cent. respectively. Thus tutocain would appear 16 times as powerful as novocaine and only two and a half times weaker than cocaine. Its effect is prolonged. Its toxicity, as tested on rabbits by intravenous injection, and on mice by subcutaneous injection, is twice as great as that of novocaine, and, so far as intravenous injection into the rabbit is concerned, about half that of cocaine. When applied to the human eye it produces no irritation, but has the drawback of causing some hyperæmia; this may be prevented by the addition of adrenalin. Various clinical reports of its use have now appeared[5]; all these are entirely favourable, both as regards its use for superficial as well as for infiltration anæsthesia. It has been used in operations for hernia, hydrocele, gastrostomy, colostomy, osteotomy (hallux valgus); also in major abdominal operations by Braun's method of splanchnic anæsthesia and also injected into the spinal canal. For nose and throat work, when used in conjunction with adrenalin, it is stated to be just as effective as cocaine. The price of tutocain is the same as that of novocaine; since, however, considerably less is required, it is cheaper than novocaine to use. Up to the present no clinical trials have been made in this country, so that it will be necessary to wait to know to what extent such favourable reports require qualification. Certain preliminary laboratory tests which have been carried out confirm the statement that it is considerably more active than novocaine. It is interesting that the Bayer firm are reported to have expressed the opinion that tutocain will prove the most valuable discovery they have made within the last ten years.

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[1] Greenwood, Newbold, and Cripps: Biometrika, 1923, xiv., 316.

[2] Medical Research Council Special Report Series No. 84. The Application of the Air Force Physical Efficiency Tests to Men and Women. By Lucy D. Cripps, M.B., D.P.H. 1924. H.M. Stationery Office. 1s. 6d.

[3] Mumford and Young: Biometrika, 1923, xv., 109.

[4] Klin. Wochens., 1924, iii., 676.

[5] Lotheissen: Wien. Mediz. Wochens., 1924, lxxiv., 891; Finsterer: Ibid., lxxiv., 895; Seiffert and Anthon: Deutsch. Mediz. Wochens., 1924, April 25th, 538; Marcuse: Ibid., 539; Suchanek: Wien. klin. Woch., 1924, No. 17, 415.

DISPOSAL OF THE DEAD.

For 50 years the Cremation Society has advocated the disposal of the dead by cremation, and the report which was read at the annual meeting on April 30th showed how much this practice has gained ground during the last half century. The total number of cremations in Great Britain during the last year was 1986, a decrease of 23 on the figures of 1922, but the report points out that there are many indications of growing interest not only in all parts of the Empire but throughout the world. When full statistics are available it is probable that the ratio which cremation bears to the death-rate will show a marked improvement, and the slight decrease is probably due to the abnormally low death-rate of the past year. The Society has given during the past year considerable attention to the question of death certification, which is intimately bound up with the future of cremation, as was pointed out in our columns recently.[1] Owing mainly to the efforts of the late Sir Malcolm Morris a fully representative committee was formed under the ægis of the Federation of Medical and Allied Services for the purpose of drafting a Bill amending the law of death certification. There is urgent need for a Bill which will leave no room for the certification of death on insufficient information, as can at present take place under the existing laws. The scope of the proposed Bill was outlined in The Lancet of Jan. 12th last. It is hoped that this Bill will be introduced into Parliament during the present session and, should it become law, it will do much to remove the existing anomalies which prevent cremation from being more widely adopted among the poorer members of the community who at present have no alternative to the common grave. The first crematorium in Wales has been established at Pontypridd, and the question of providing a crematorium for the West of England has again been brought into prominence. It is hoped that a crematorium may be established at Plymouth or some other convenient centre. The provision of a crematorium is also be to considered by the local authorities at Cardiff, Chiswick, Canterbury, and Richmond in Surrey. The disposal of the dead vitally concerns the health and welfare of the living in all classes of the population and is also of the greatest economical importance to the country at large.

The principal firms engaged in the production of insulin in Great Britain are reducing the retail price of insulin to 5*s.* per 100 units as from May 12th. The present retail price is 6*s.* 8*d.*, and is the result of a series of reductions which have taken place since insulin first came on the market here at 25*s.* per 100 units early in 1923.

The Manager of The Lancet would like to purchase copies of the issue of Feb. 2nd, 1924, for which subscribers may have no further use. He will be pleased to pay 1*s.* each for them. Such copies should be addressed to him at 423, Strand, London, W.C. 2.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXX.—INFECTIONS OF THE HAND.

The great prevalence of hand injuries and the need of obtaining complete restoration of function for wage-earners makes their treatment of great economic importance. The following processes will be dealt with here: (1) Acute lymphangitis; (2) infections of the terminal segment of the fingers; (3) acute tenosynovitis; and (4) the infections of the fascial spaces in the palm. The degree of disability and the time lost from work depend largely upon the early and exact recognition of the type and the site of the infection. Most really bad septic hands are due to faulty diagnosis.

Prophylactic Treatment.—In all industrial works facilities for immediate treatment of minor injuries should be provided. In small works the foreman should be given instruction in elementary first-aid and be put in charge of a small surgical box, while in large concerns a special first-aid dispensary should be established. In the treatment of small cuts, pricks, and skin abrasions no attempt is made to cleanse the wound, which should be liberally painted with tincture of iodine and a dressing applied.

Acute Lymphangitis.

In this condition diagnosis is of the utmost importance, for if it is unrecognised and the finger incised, the general condition of the patient may be seriously imperilled. The finger, following a slight prick some hours previously, becomes slightly swollen with a dull ache, this condition being ushered in by a feeling of malaise or, in bad cases, by severe chill. Within a few hours the tell-tale red line has appeared in the forearm and there may be quite obvious swelling of the dorsum of the hand, though the primary site of infection remains but slightly swollen. The degree of systemic involvement varies very considerably in different cases. Treatment will be directed to the local lesion and to the general condition of the patient. Locally, oft-repeated, large hot dressings will be applied to the whole hand and forearm, while Bier's passive hyperæmia obtained by a Martin's bandage placed round the arm will be found of great service. Generally, the patient must be treated in bed, eliminative measures, such as saline purges and diuretics, must be instituted, and the patient's general condition supported by stimulants. An incision will be required only if a localised abscess develops at the site of infection or in the lymph glands at elbow or axilla. Complete recovery is often rapid, though in a few fulminating cases death cannot be avoided.

Infection of the Terminal Segment of the Fingers.

In these cases, usually, but not always, preceded by a slight prick, a stabbing pain is felt which soon gives place to a severe throbbing pain, sufficient to keep the patient awake. The end of the finger becomes swollen, red, tense, and very tender over the site of infection. The pain, swelling, and tenderness increase, and the swelling will spread down the finger and on to the dorsum of the hand, but the pain and tenderness remain localised to the terminal segment. Treatment consists of an incision on the lateral surface of the finger—never in the middle line—from the distal flexion crease to within half an inch of the tip. This will suffice in early cases, but in severe ones a second lateral incision should be made on the other side and these two joined up over the end of the finger, keeping within a quarter of an inch of the edge of the nail. The flap thus formed should be dissected up so as to open completely the fibro-fatty pocket and a slip of rubber tissue inserted between the flap and the periosteum. This promotes excellent drainage, rapid subsidence of the infection, and complete restoration of function.

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[1] The Lancet, Feb. 16th, p. 344.

Acute Tenosynovitis.

This serious condition may be caused by a crushing accident or by infection carried from a mere scratch or prick. It will be diagnosed by severe pain; by a symmetrical enlargement of the whole finger, with the swelling spreading to the basis of the neighbouring fingers, to the palm, and particularly to the dorsum of the hand; by exquisite tenderness along the whole length of the sheath; by severe pain on passive extension of the finger, especially when the full limit of extension is reached; and by the fingers being held in the semi-flexed position, the affected finger rigidly so. This clinical picture combined with a raised temperature and pulse-rate and general malaise is unmistakable.

The infected sheath must be opened and drained, and only two problems need any discussion—viz., the site and the length of the incisions. The following procedure is based upon A. B. Kanavel's well-known work and has given admirable results. First, an incision is made either in the proximal or in the middle segment of the finger, depending on the site of the original infection. It is placed at the lateral aspect and extends the whole length of the phalanx. The tendon sheath is now laid open, but the part over the joints is left uncut so as to prevent prolapse of the tendon. By manipulation some idea can be obtained of the degree of infection in the unexposed part of the sheath, and if much pus can be squeezed out, then a second incision is made over the previously uncut segment of the finger and the sheath opened there. If the sheath contained very much pus, if the synovial surfaces are severely damaged, or if the swelling of the finger is so great as to obstruct drainage, then the two previous incisions should be joined up and the sheath opened throughout its entire length.

In dealing with the little finger, the extension of the infection into the ulna synovial bursa in the palm is to be suspected, as the sheath and the bursa are usually continuous. The recognition of this extension is by no means easy, but these points will be of use. No marked local swelling of the palm or fluctuation in the palm will occur because of the dense palmar fascia and because the infection breaks through into other structures before these signs are present. One sign is of diagnostic importance—viz., the spread of the area of exquisite tenderness from the little finger sheath to that part of the palm corresponding to the limits of the bursa. The problem is usually not so difficult as it appears, because when the sheath of the little finger has been opened, pressure over the bursa in the palm will cause pus or turbid serum to well up in the wound if the bursa be infected. In this case a grooved director should be passed through the finger incision down the sheath into the bursa. The incision is then made from the distal flexion of the palm to the level of the hook of the unciform; in order to avoid injury to the tendons and to obtain the best drainage the incision should be placed at the ulna border of the bursa.

Similarly, the radial bursa is suspect in infections of the thumb. Early diagnosis is of paramount importance in the thumb because a very large proportion give rise to secondary infection of the ulna bursa as well, thus producing a very grave condition. The signs are similar to those in finger and ulna bursal infections, the line of exquisite tenderness being the most important feature. The sheath is opened by an incision in the mid-line of the flexor surface of the thumb opposite the proximal phalanx. It is then continued in a gradual curve over the prominence of the thenar mass, ending half an inch distal to the lower margin of the anterior annular ligament. The sheath is reached by separating the two heads of the flexor brevis pollicis.

Infection of the Fascial Spaces of the Palm.

The middle palmar space lying immediately in front of the metacarpal bones of the middle, ring, and little fingers and the corresponding interossei muscles, and immediately behind the tendons in the palm, is subject to secondary infection from these three fingers, from their tendon sheaths, from the ulna bursa, and from the three lumbrical canals, as well as by direct trauma. Infection of this space is characterised by such swelling that the normal concavity of the palm is obliterated, and by tenderness over the surface area of the space. An abscess in this position may be drained on either side of the ring finger, and the guide to it is the corresponding lumbrical muscle. The decision rests with the site of the original infection, or the situation in which the pus is obviously coming to the surface; where there is any doubt the lumbrical canal between the middle and ring finger is chosen as giving the best drainage. The incision starts in the web between these two fingers and ends half-way between the distal and middle flexion creases of the palm. This opens the canal, and a pair of sinus forceps following the muscle and passed beneath the tendons will open the space, drainage being ensured by a strip of rubber tissue.

The thenar space lying on the anterior surface of the adductor transversus pollicis muscle, therefore, lies to the radial side of the middle metacarpal. Its infection may be recognised by the great swelling and tenderness of the thenar eminence. The space is opened by an incision in the dorsum of the hand along the radial side of the index metacarpal corresponding to the shaft in length. The lower border of the adductor transversus can readily be identified, and sinus forceps being passed along the palmar surface of the muscle the space is drained.

I would emphasise that in both these conditions, as indeed in every septic finger and hand, the swelling of the dorsum of the hand is most noticeable.

Operative Technique.—After-treatment.

(1) Incisions should be made under general anæsthesia; nitrous oxide alone is not suitable. (2) A tourniquet should always be used—preferably the arm compressor of a sphygmomanometer. (3) Drainage may best be obtained by rubber tissue wicks or paraffin flavine gauze—tubes should never be used. (4) No incision should be made until the surgeon has made up his mind exactly where the pus is, and exactly at what anatomical structure he is aiming. (5) No incision should ever be made upon the dorsum of the hand till every other possible site of pus elsewhere in the hand has been eliminated. Swelling of the dorsum is present in every septic hand, and incisions here do no good, only harm. (6) At the end of the operation it is often very useful to release the pressure in the arm compressor until passive congestion is obtained. This may be kept up for three hours.

All these conditions are best treated by hot boric fomentations for 48 hours, after which time small flavine dressings to the wound and light dry dressings should be used. In very bad cases baths of iodine (one drachm of the tincture to a pint of water) at 110° F. will be found soothing to the patient and useful in clearing up the worst of the infection. They should be used twice a day for 20 minutes at a time. I am of opinion that two further measures are of superlative importance: (1) To bake the hand in hot, dry air with radiant heat twice a day from the time dry dressings are being employed. Messrs. Weiss have designed a special box for me for radiant heat treatment of these hands. (2) Most important of all, after adequate drainage, is the institution of active movements at the earliest opportunity. The principle is the same as that introduced by Willems in the treatment of acute infective arthritis. Patients should be encouraged to move their fingers as early as the third day, and it will be found that they will do this at first most confidently while the hand is in the radiant heat bath. For this reason dressings should be as light as possible. If movements are encouraged as one of the recreations of convalescence no stiff fingers will result, and secondary operations, the use of typewriters, pianos, and various ingenious devices will not be needed.

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Special Articles.

ANNUAL CONGRESS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY, MAY 1ST.

THE opening meeting of the Congress took place on May 1st at the University, Glasgow, Dr. R. Maitland Ramsay, the President, in the chair. After Principal Sir Donald MacAlister had welcomed the Society to Glasgow and the University, a discussion took place on the

Physiology and Pathology of the Pupil Reactions.

Sir John Parsons dealt with the anatomy and physiology of the pupillary mechanism. He referred to the work of Anderson and Lange, and stated some essential points in the embryological and comparative anatomy of the region. He dealt with the factors upon which the pupillary reaction to light depended. He pointed out that recent work goes to prove the theories that the constrictor centre is situated near the anterior and inner end of the third nerve nucleus, that the centre for convergence is on the inner aspect about the middle, and that the accommodative fibres are centred at the posterior end of the nucleus. The superior colliculus in man has developed proprioceptive functions and fibres connect it with the vestibule. It may have connexion with the pupillary reactions. The dilator centre was believed to be near the third nerve nucleus, but recent research places it higher up, and some believe that it is behind the optic radiation and lateral to the infundibulum. The mechanism of the pupil is exceedingly complicated, it is in a constant state of unstable equilibrium, and the whole problem presents many difficulties.

Dr. Edwin Bramwell approached the subject from the physician's standpoint. The physician is concerned with eye symptoms in relation to general disease, the ophthalmologist with eye symptoms in relation to local disease. The eye symptoms in general medicine have more relation to the anatomical situation of the lesion than to its actual pathology. The physician seeks the diagnostic value of symptoms and does so in two ways, first by co-relating clinical signs with pathological findings, and secondly, by analytical study of the sign and its associated phenomena. He must never forget that an eye symptom may be present as a local manifestation, and must beware of associating it with a general disease; also a symptom may be present which is common to two conditions—e.g., a man may have myosis and an intrathoracic aneurysm, but the myosis may be due to locomotor ataxia. Argyll Robertson's famous paper was published in 1869. The sign described first by him has been reported in cases of disseminated sclerosis, encephalitis lethargica, also following trauma to the head or eyes.

Mr. R. Affleck Greeves drew attention to the alterations in the size of the pupil in relation to age. The infantile pupil is small, the adolescent large, and thereafter the pupil gradually gets smaller as the individual gets older. The small pupil of old age is due, he believes, to a stiffening of the iris and particularly of the blood-vessels. He quoted statistics showing that 4 to 10 per cent. of perfectly healthy people have unequal pupils. Enlargement of the pupil is present in many conditions. In glaucoma simplex the pupil is unaffected, in long-standing cases it is dilated, and he emphasised especially the oval pupil which is found in subacute cases and which he regards as being diagnostic. A small pupil is got in trauma when a penetrating wound is present which allows the intra-ocular tension to fall. In diabetes œdema of the pigment layer occurs which accounts for the sluggishness of the reflexes in that disease. Flattening of the pupil occurs in traumatic iridodialysis and is also an important sign of intra-ocular tumours, especially malignant ones. He quoted some very interesting illustrative cases, particularly one of a girl in whom the left pupil went through a rhythmical cycle of dilation and contraction combined with drooping of the upper lid.

In the subsequent discussion Mr. E. Treacher Collins gave a short account of some of his work on the iris, which he illustrated with numerous slides; amongst others, he demonstrated the complete absence of sphincter fibres in congenital myosis. He pointed out the curious developmental relation of the iridic and ciliary muscles, the former being epiblastic, the latter mesoblastic in origin. In certain lower animals the mechanism of pupillary reaction is entirely local; in the higher ones it is a complicated reflex process. Mr. Inglis Pollock showed a number of slides illustrating the presence of supplementary ciliary ganglia in cats and dogs. He gave an account of his work in excising the ciliary ganglia of rabbits and the subsequent action of drugs such as pilocarpine, pituitrin, and adrenalin on the pupil reaction. Mr. R. Foster Moore contributed an account of several cases of what he called non-luetic Argyll Robertson pupil. In four of them the condition was unilateral. The essential features were normal fundi, reaction to light lost, very slow contraction and relaxation on convergence, full dilation with mydriatics, presence of the knee-jerks, no history or evidence of syphilis, and completely negative physical examination. Mr. Leslie Paton pointed out that the spirochætes lay dormant in interstitial tissue and that in locomotor ataxia they were found lying in a fold at the exit of the posterior roots from which they attack the parenchymatous tissue. He suggested that a possible origin near the area involved in an Argyll Robertson pupil was to be found in a little pocket of interstitial tissue situated behind the pineal body.

In the afternoon Prof. Graham Kerr read a paper on

An Experiment in Binocular Vision.

There are, he said, three advantages of having two eyes; firstly, the individual has a spare one in case of accident; secondly, he has the advantage of binocular vision; and thirdly, he obtains an increased intensity of mental impression. It was to convince himself of the truth of the third point that he designed the experiment. He made a white figure on a black background. The figure he chose was the shape of a four-leaf clover and was about four inches in size. He held this figure about 18 inches from his eyes and by focusing upon a point beyond that distance he produced two images. By bringing his point of focus nearer he could make the two images come closer together and ultimately to overlap. He found when two leaves completely overlapped that he obtained a relatively more intense image. All attempts to measure this intensity failed owing to the unknown psychical factors involved. In his opinion the experiment showed that there is a summation of the images seen by both eyes, similar to that which occurs in animals possessing dozens and even hundreds of eyes, such as slugs, winkles, and sea-urchins. It is difficult to believe that these animals get hundreds of separate impressions of the same object if there is no summation of the images.

Sir Arnold Lawson reported a case of

Bilateral Symmetrical Detachment of the Retina with Normal Vision.

The patient was a woman of 45 who, in 1915, had a severe fall with injuries to her back and head; she was laid up for a short time, but recovered completely. She was given glasses for presbyopia in 1918 and again in 1922. In February, 1923, she complained of shadows over the right nasal field, and ophthalmoscopic examination showed a detachment of the retina on the outer side of the right eye. The rest of the fundus was normal. She was ordered to bed, and on examination a similar but less extensive detachment was found in the left eye; both eyes with presbyopic correction had normal vision. Thorough medical, radiological, and rhinological examination showed no abnormality. Since coming under observation she has had faint turns on several occasions; during these attacks she felt dizzy and fell down two or three times. They were put down by a neurologist to the occurrence of the menopause. They have not altered her retinal condition, which is exactly the same just now as when first detected in February, 1923. Mr. Hepburn suggested that the condition might be due to hæmorrhage.

Prof. Snellen (Utrecht) spoke on

Diplopia and Strabismus.

His remarks were concerned chiefly with concomitant convergent strabismus. He thought that all would agree with him in saying that the present operative treatment of squint was unsatisfactory, that advancement and tenotomy, although successful in a certain proportion of cases, frequently left the patient no better. He is of opinion that the true ætiology of the condition is not realised. In his opinion it is due to paresis of both external recti. This theory is a simple one to understand by those who believe it, but a difficult one to make unbelievers understand. Another problem is the absence of diplopia in concomitant convergent strabismus. Prof. Snellen pointed out that each eye is a complete visual entity. The eyes may be used separately for two different purposes—e.g., one eye may be looking down a microscope, and the individual's attention is concentrated on the work of that eye, but at the same time he can receive impressions of a totally different nature from the other eye, such as sudden movements in the room where he is. In strabismus the patient must fix with one or other eye, and it is obvious that he will use the better of the two; he may use one for distance and one for close work. If both eyes are equal he may use the right eye when looking to the left and the left eye when looking to the right, thus producing "alternating squint." In paralytic squint the patient attempts to use both eyes at once, and consequently he sees double.

Mr. A. F. MacCallam spoke of his

Twenty Years' Ophthalmic Work in Egypt.

He described the condition in Egypt in 1903, when he first went out, the difficulties which had to be overcome before an efficient ophthalmic service could be instituted, and how both officials and population were suspicious of the efforts which were made. The service has now got 14 hospitals as well as numerous travelling hospitals. They are staffed by Egyptians and are maintained partly by Government grants and partly by the local county councils.

Mr. Leslie Paton reported some

Ocular Complications of Spontaneous Subarachnoid Hæmorrhage.

He based his remarks upon two clinical cases and upon a review of the literature. The anterior portion of the circle of Willis is by far the most common site of hæmorrhage owing to the lack of surrounding tissue support, the poorly developed adventitia of the vessel, and the great frequency of congenital abnormality in them. Local syphilis and tubercle are not common causes; the most common causes are aneurysm, which may develop from a congenital abnormality, infective emboli, and high blood pressure. An unruptured aneurysm rarely causes eye symptoms, although certain cases of ophthalmoplegic migraine have been attributed to this. Papillœdema may follow rupture of an aneurysm immediately if there is any blocking of the optic foramen, in a few days if the intracranial pressure increases slowly, and it may not appear for some months if a cystic hæmatoma is formed. Hæmorrhage appearing in the fundi is due to leakage along the nerve sheath and through the lamina cribrosa.

Dr. Brownlow Riddell read a paper upon

Eye Symptoms in the Early Diagnosis of Disseminated Sclerosis.

He based his remarks upon a series of cases which had come under his observation since 1897. He had been very much impressed by the frequency in which a retrobulbar neuritis or a transient attack of diplopia preceded any other gross evidence of organic change. In a number of such cases—i.e., retrobulbar neuritis or transient diplopia—careful physical examination revealed unsuspected evidence of the disease, and in recent years serological examination has helped to confirm the diagnosis. He urged that all such cases at an eye clinic should be looked upon with suspicion, although he was well aware that the immediate ophthalmological prognosis was good. A lively discussion followed this paper, during which Dr. de Schweinitz expressed the opinion that even after the accessory sinuses had been operated upon in cases of retrobulbar neuritis in which they were believed to be the cause, disseminated sclerosis could not be eliminated, and he entirely agreed with the essayist upon the points which he emphasised. Mr. T. Harrison Butler pointed out the difficulty in the differential diagnosis of disseminated sclerosis and of certain mild cases of encephalitis lethargica. Messrs. Leslie Paton, Basil Graves, Gray Clegg, A. J. Ballantyne, Johnson Taylor, H. L. G. Leask, and Bernard Cridland also spoke.

Friday, May 2nd.

On May 2nd the general business meeting was held and the report of the Council of British Ophthalmologists was received. Mr. E. Treacher Collins was elected President for the session 1924–25. In the afternoon a reception was held at the University by Sir Donald and Lady MacAlister.

Clinical Meeting.

In the forenoon a successful clinical meeting was held at the Glasgow Eye Infirmary. Cases of great interest and diversity were demonstrated by the local members of the Society; and Mr. Harrison Butler, with the assistance of Mr. Basil Graves, Dr. W. C. Souter, and Mr. A. H. H. Sinclair, helped to initiate some of the members in the use of the Gullstrand slit lamp and corneal microscope. Mr. Butler gave also a demonstration of the use of Hess's apparatus for the investigation of muscle paresis. This gave rise to some interesting discussion, but as most of those present were unfamiliar with its use, its value could not be finally assessed. It seemed, however, to be a method which is admirably adapted for use in very young or very unintelligent patients, but a little elaborate for routine dispensary work.

Dr. J. Rowan demonstrated some of the cases of congenital cataract upon which he had operated in the manner described in his paper, which he read to the Society later. Dr. Wright Thomson showed some cases of glaucoma upon which he had performed Bentzen's modification of Elliot's operation, where an inferior incision is made close to the corneo-scleral margin and the conjunctiva allowed to retract slightly. This permits of clearer access for the trephine and reduces the danger of "button holing." Dr. Ballantyne showed two cases of birth injury to the cornea, one of unilateral congenital anophthalmos and a most interesting case of a rare form of muscular dystrophy. This case showed involvement of the extra-ocular muscles and the muscles of the face on both sides. Dr. Riddell and Dr. Hislop Manson demonstrated three members of a family of "blue sclerotics." Fourteen members of the family have been traced and the condition is present in varying degrees in nine of them. The family includes two girls, twins, one with and the other without the condition. The affected members have had more than a fair share of fractures, but there is no history of deafness nor of hæmophilia. Dr. Riddell showed a case of choroideremia with a family history of retinitis pigmentosa. Mr. Inglis Pollock had numerous cases showing the results of operation on glaucoma by the Lagrange method and of simple extraction followed by early division.

The Gullstrand Slit Lamp and Corneal Microscope.

This demonstration was of the greatest interest, and a practical demonstration of the instruments is almost essential before one can grasp the rudiments of the subject or realise the fields of research which their use open up. As an illustration, the arrangement of the instruments can be compared to two knives plunged into the centre of an apple at different angles but on the same horizontal plane. One knife represents the slit lamp beam, the other the axis of the corneal microscope through which the observer looks, and the apple represents the eye. Only that portion of the eye traversed by the beam is illuminated directly, and obviously that is the only portion which is seen when the observer looks through the corneal microscope. There are numerous adjustments which can be carried out, the size and shape of the slit lamp beam can be altered, and the angle of approach both of the microscope and the lamp can be varied to suit the object of the observer. It is clear that numerous corrections must be made for the different refractive indices of the strata through which the beam passes and for other sources of error, such as reflection of the beam from the various reflecting surfaces which it strikes, and for an impression of intensification of the beam where light is thrown back towards the observer as it passes into a tissue which has a different refractive index. These factors have all to be taken into account when translating what one thinks one sees into what is actually present. Mr. Butler, by means of a few simple diagrams, made it easy for inexpert members of the Congress to understand what they saw in the normal eye. He also demonstrated the slit lamp features of certain pathological conditions, such as iritis, cataract, corneal opacities, &c. The solution of many problems may be hastened by its use—for example, that of developmental errors. One of its great practical uses is that sympathetic ophthalmia may be detected at a very much earlier stage than formerly—before, in fact, the clinical picture of the disease has had time to develop.

At the evening session held at the University, Mr. Butler followed up his work of the morning with a paper on the

Anatomy of the Normal Lens as Revealed by the Slit Lamp.

He explained his own difficulties in approaching the subject. Most of the literature was in German, a great deal of it was diffuse and obscure, and there was at present no text-book on the subject. Another problem to be faced was that, having read the literature, he found the application of it extremely difficult, as each observer had his own ideas about the interpretation of what he saw and his own standards in the differentiation of light, shade, and colours. The preparation of illustrations was made difficult owing to circumstances which forced them to be only memory pictures. The final problem was that, having mastered the technique and the literature, it was found that no two lenses appeared alike, and consequently the difficulty of explaining what a normal lens should look like was very greatly increased. This could only be solved by each observer examining clinically normal eyes and forming his own opinion as to what was and what was not early pathological change. For example, in the morning he had demonstrated pigment granules to be present on the anterior lens capsule of the eye of one of the members of the Congress. This was of no significance. Small areas of what appeared to be cataractous change were seen so frequently in individuals of all ages who were perfectly well that they were of no significance, so far as our present knowledge went.

Mr. Butler exhibited an instructive series of drawings prepared by himself showing the normal lens in many of its normal variations; he also demonstrated certain fallacies which have to be avoided. The anterior Y and posterior inverted Y could usually be seen; as was well known, these were the results of the suturing of the lens. Numerous other sutures could also be appreciated in healthy people; the lens nuclei could be shown and the various layers which went to make up the lens appeared with a variety of colour and shade quite unsuspected before the introduction of this aid to clinical investigation. A small opacity of no pathological significance in the anterior portion of the lens might throw an intense shadow across the field of vision and might lead the observer into the error of supposing that it was due to a more important change. The literature was already showing signs of inaccurate nomenclature, and he suggested some simpler terms which could be used to replace those resulting from literal translation from the German.

Later in the evening Mr. Basil Graves gave a paper on the

Histological and Slit Lamp Features of a Limbus Tumour.

Owing to the short time at his disposal his demonstration had to be hurried. He explained certain difficulties, particularly of an optical nature, which he had found in the use of the slit lamp, and demonstrated their solution by means of simple diagrams. He also drew attention to the occurrence of a copper bronze reflection from normal epithelium on the posterior corneal surface when the angle of incidence of the slit lamp beam and of the axis of the observer's eye were exactly the same. The object of his paper was to correlate the ordinary clinical, histological, and pathological features with the slit lamp findings in the case of a boy who had a small limbus tumour. Examination by the slit lamp demonstrated its pigmented character and also a thickening of the connective tissue immediately behind it. It was removed and found histologically to be a tumour somewhat similar to a skin mole or innocent melanoma.

Mr. J. Gray Clegg read a paper on

Central Scotoma in Anterior Uveitis.

Several cases of this nature had come under his observation, and he was of opinion that the association would be found, if looked for, in a proportion of cases of anterior uveitis. In most of his cases the condition cleared up with the subsidence of the primary disease. He expressed the opinion that the condition was analogous to the toxic scotomata caused by alcohol, tobacco, T.N.T., &c., except that in the cases he was reporting the toxic effect was produced by direct spread through the vitreous humour. He described a few of his cases in detail, and urged members of the Society to investigate cases of iridocyclitis for the presence of scotoma.

Dr. Ivy McKenzie spoke on the

Trigeminal Nerve as an Integrating Mechanism between the Nose and Eyes.

He remarked on the complexity of the fifth nerve and its connexions, and expressed the opinion that it was one of the most complicated nerves in the body. His remarks turned on his belief in the theory that sensory nerves can carry stimuli from the central nervous system to the periphery. He regarded the existence of antidromic impulses as proved beyond doubt. He applied this theory to the explanation of certain forms of headache; the fifth nerve nucleus was irritated by some poison or toxin and the impulses carried out from it were referred to the head and so produced headache. On similar lines he suggested an explanation of the frequent clinical association of giddiness, vertigo, vomiting, and headache, in the close association in the brain of the nuclei and centres connected with these symptoms. He suggested that a parallel state of affairs existed with regard to the ulnar nerve; symptoms might be referred to the area supplied by it in conditions such as pleurisy, angina pectoris, and gall-stones. This was owing to the fact that stimuli from the diseased region were referred to the central nervous system and arrived, in the diseases chosen for illustration, about the position where the sympathetic endings in the cord could irritate the nuclei from which the ulnar nerve fibres arose. Further, the fifth nerve nucleus was connected up within itself by a network of "fibræ comitantes," which could be used, along with the antidromic theory, to explain numerous conditions such as the stimuli from a diseased tooth being referred to a sound one or to the supra-orbital region. These he described as examples of "irradiation of stimuli." He suggested the application of these theories to eye conditions, particularly trophic and nutritional disturbances, such as herpes and certain forms of ocular pain.

Sir John Parsons did not agree with the statement that the antidromic theory was generally accepted. He had an idea (which he found a little difficult to express clearly) that the "epicritic" distribution of headache was untrue. To his mind certain headaches were much more like a "protopathic" explosion, a primitive nerve action, and the distribution could not be mapped out according to the branches of the fifth nerve.

Mr. Leslie Paton referred to Head's brilliant researches, and also doubted the antidromic theory. He thought that many of the illustrations used to back it up could be explained by the presence of a virus possessing neurotropic and dermotropic characters, and quoted experimental work on rabbits in which herpes had been produced by the dermotropic action of a virus. By transferring the infection through a series of rabbits the neurotropic elements became exalted and symptoms of encephalitis lethargica were produced. In his opinion, all antidromic phenomena could be explained by assuming that the neurotropic and dermotropic powers of the virus manifested themselves at the same time.

Miss Ida C. Mann read a paper on

Coloboma Iridis and its Embryology.

She mentioned several theories which had been put forward as explanations, but for simplicity did not go into the details of their rejection. Any theory which was to explain the condition must be capable of application to all the positions in which coloboma iridis occurs; to the fact that the fissure was sometimes incomplete; to partial colobomata which appeared like holes in the iris; and also to aniridia, a condition the existence of which the speaker appeared to doubt. In a beautiful series of drawings she illustrated what she believed to be the true developmental reasons. Certain branches of the hyaloid artery which break up to form the vascular capsule of the lens pass out of the extreme pupillary end of the cleft to anastomose with vessels outside the developing optic cup. These anastomosing vessels were most marked at the sites where coloboma iridis was most common—i.e., downwards and on the inner and outer sides. If any one of these vessels and its surrounding tissue persisted in a well-developed state, the advancing border of the optic cup, which in course of time would form the retinal iris, was arrested and the unobstructed portion on each side swept forward, thus forming a cleft in what would otherwise be a normal iris. Pathological evidence of the truth of this theory was found on examination of the developing eye of an anencephalic embryo.

Prof. T. H. Bryce said that he was extremely interested in the paper and thought that the explanation put forward was very reasonable. Mr. E. Treacher Collins also spoke.

SATURDAY, MAY 3RD.

On the morning of May 3rd the final meeting of the Congress was held at the University. Dr. John Marshall gave an account of a case of

Persistent Hyaloid Artery and Tunica Vasculosa, with Buphthalmos.

The patient was a child of 3 who had been seen when about a year old; the condition was diagnosed as pseudo-glioma. When seen later she was suffering from buphthalmos with iris bombé and intercalary staphyloma. The eye was removed on account of its size (by Dr. Riddell). He described the pathological findings and asked for information as to the possibility of operative treatment along the lines of a trephining operation in the early stage, thus preventing stretching of the globe. Mr. E. Treacher Collins and Sir John Parsons gave their views on the condition.

Dr. John Rowan reported the results of

Iridectomy in Congenital Cataract.

Among the points which he advanced were: (1) The patient did not require to wear glasses; (2) the condition, as a general rule, was not progressive; and (3) it was to be preferred to more radical methods of cure. He performed his iridectomy downwards and made it as small as possible. On the previous day he had been able to demonstrate cases which had been operated upon over 20 years ago. He gave a short account of some of his more recent cases as evidence in support of this method of treatment. An interesting discussion followed, in which Dr. A. J. Ballantyne, Dr. W. G. Sym, Sir Arnold Lawson, Mr. J. F. Cunningham, Mr. Johnson Taylor, Mr. Gray Clegg, Mr. Herbert Fisher, Sir John Parsons, Mr. Treacher Collins, and Dr. James A. Wilson took part.

Dr. G. F. Alexander read two communications: one describing an operation in failure of iridectomy for glaucoma, and the other on the advantages of a strong solution of atropine in removal of cataract. The points raised by the speaker were essentially concerned with technique.

Dr. S. Spence Meighan reported two cases of

Traumatic Vesicular Keratitis.

He said that this was a rare condition. De Schweinitz had seen three cases in 12,000 patients. He pointed out its extreme resistance to all forms of treatment and the difficulty of diagnosis in the first instance. One of his cases was present at the clinical meeting on the previous day. There was a good deal of discussion following his remarks, in which, amongst others, the following spoke: Dr. Ballantyne, Mr. Johnson Taylor, Dr. Wilson, Sir Arnold Lawson, and Mr. Paton. The last named made the most interesting suggestion that the resistance to treatment and anæsthesia of the cornea present in this condition might be due to failure on the part of the minute nerve endings in the cornea to regenerate, thus producing in the cornea a condition analogous to "stump neuromas."

Mr. Inglis Pollock urged the advantage of early division after simple extraction operations. This second operation he carried out, if all went well, on the fifteenth day after the primary one. He advocated the use of a Ziegler knife in preference to a needle.

Conclusion of the Meeting.

The President, at the conclusion of the meeting, expressed the pleasure and honour that it had been to him to welcome the Society to the place where MacKenzie had lived and worked. His name would always be a source of inspiration to ophthalmologists. Mr. Herbert Fisher expressed for the visiting members of the Society their gratitude and appreciation of all that had been done to make the Congress the great success it had been. He desired the meeting to instruct the Secretary to express their special gratitude to the Principal of the University, Prof. Graham Kerr, and the other members of the staff who had done so much for them by placing the Department of Zoology at their disposal.

SCIENTIFIC MUSEUM.

In connexion with the Congress a museum was arranged, and the following were among the most interesting exhibits. Dr. A. Maitland Ramsay and Dr. Alex. Garrow showed a beautiful series of autochrome plates of diseases of the eye. Dr. Leslie Buchanan showed original papers of great historical interest, such as a first edition of Helmholtz's paper on the ophthalmoscope, some of MacKenzie's instruments, and his paper on the treatment of strabismus. Dr. Ballantyne displayed a series of fundus drawings executed by himself. Prof. Bryce showed specimens illustrative of the development and anatomy of the eye, from the Department of Anatomy. Prof. Graham Kerr showed microscopic preparations illustrative of the comparative anatomy of the eye, from the Department of Zoology, and a demonstration of the use of the binocular eye-piece with high power microscopic objectives.

Exhibits of Value in the Teaching of Ophthalmology.

The scientific museum in connexion with the Congress gave evidence of the admirable teaching facilities offered by the various departments represented. Among notable exhibits were Cleland's famous series of dissections of the eye in various classes of vertebrates, which make one wonder whether we are not losing the art of dissection. Which of us would feel quite confident if asked to display intact the membrane of Descemet with scalpel and forceps?

Another interesting section showed a series of models (illustrating phases of development in vertebrates), which had been made by the students in the class of embryology themselves. With this exhibit was associated a series of most perfect sections of the embryonic eye in lepidosiren.

The most striking exhibit, perhaps, from the teaching point of view, was a large series of autochrome plates of external diseases of the eye. These were shown by Dr. Maitland Ramsay, Dr. John Rowan, and Dr. Alex. Garrow. Dr. Rowan's series were stereoscopic and of extreme value to the student of eye diseases, as one almost seemed to be looking at the actual patient. The colouring was perfect. In most cases the picture showed the head and shoulders of the patient, so that an excellent idea of the general type of person could be formed, obviously of much more value than a picture of an isolated eye, however well drawn or photographed. The plates illustrating interstitial keratitis, marginal blepharitis, rodent ulcer of the lids, and ophthalmia neonatorum were specially valuable in this respect. Everyone knows that systematic teaching in the out-patient department is sometimes marred by the failure of a sufficiently great variety of cases, and a series of such plates, particularly stereoscopic, would be a most useful adjunct, allowing of comparison of a whole series of similar conditions with the patient of the moment.

At this exhibition one was reminded strongly of the dictum that while the older universities supply tradition and the stimulus to research, it is to the northern universities that one must go to see teaching institutions par excellence. In the south the undergraduate may sometimes be looked on as a necessary encumbrance; in the north he is the central figure in the university and his every requirement is catered for.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Medical Officer and the Medical Inspector.

VERY many private enterprises and business houses make themselves responsible for the medical care of their employees, victims of industrial accidents or diseases, while those suffering from injuries received in the war obtain medical assistance under legal regulations. It is now suggested by the legislature to subject a third of the French population to compulsory insurance against sickness, and to give to the medical man in charge of industrial personnel the double rôle of doctor and medical inspector or controller. Dr. Balthazard, Professor of Legal Medicine in the Paris Faculty, has therefore drawn the attention of the Academy of Medicine to this proposal as one which violates the principles of the profession, for the doctor in charge in such circumstances of sick employees, if he were also the inspector for the employers, would be obliged to inform his principals of the diagnosis, cause, and probable duration of the illness. It is obvious that the provision of medical attention for the workers may provoke misunderstanding between the employers and the workmen, but the doctor who actually treats the men is the only person qualified to look after the interests of the sick, and it is impossible that a doctor paid by the employers can also be constituted arbiter between them and the sick men under his care. Certain business concerns, whether private or public, like gas companies, police bureaux, or the Assistance Publique, realise the necessity for the distinction which the law has lost sight of, arranging that while the sick man is looked after by the doctor of his choice, control is exercised by another medical man nominated by the employers. While medical inspection is to be organised alike for the victims of industrial accidents and those who are drawing legal pensions, it is established by law that neither the doctor in charge nor the doctor nominated by the employers can be selected as an expert in legal proceedings consequent on industrial injury. On the motion of Prof. Balthazard the following resolution was passed by the Academy: "In the interests of the sick who ought to find in their own doctors their natural protection, and mindful also of the principles guarding medical confidence, the Academy affirms that in every organisation for medical treatment the rôle of the doctor actually treating must be considered incompatible with that of controller or inspector. In matters of expert treatment the Academy affirms that the incompatibility is yet more strict between the duties of the expert and those of either the doctor in charge or of the inspector."

The Children of Tuberculous Mothers.

It seems well established to-day that tuberculous infection of the fœtus, produced through the placenta, is of infinitely rare occurrence, and that the infection of nurslings born of tuberculous mothers is a result of familial contagion. But it is under discussion whether these children are born with a diminished coefficient of vitality, as in France Landouzy and Barbier have maintained. In contravention of this view Debré thought it possible to establish that these children are born with a weight of about 3250 g.—i.e., a weight little, if any, below the average. Quite recently Prof. Couvelaire, who has made a study of children born from tuberculous mothers, brought up by foster-parents and withdrawn from contact with their mothers, has revealed to the Society of Obstetrics and Gynæcology at Paris the very high mortality among them—viz., 38 per cent. in the first month. Most of the infants died from no demonstrable cause—one might say that they went out like lamps unsupplied with oil.

Dr. Vignes laid down at one of the last sittings of the Society of Biology that, save for a few exceptions, if one sets down the weight of the children born of tuberculous mothers at the exact term of gestation and compares this weight with the average weight observed at the same period among the newly-born in Paris, we find some instances of weights superior to the average or approaching that average, and a very great number of children who are inferior in weight, that inferiority being more accentuated among children of multiparæ than among those of primiparæ. The results of this work are in contradiction to those of another communication by the same author to the French Association for the Study of Cancer (Séance, March, 1924), for children born of cancerous mothers, even if the cancer was grave, had generally a weight fairly approaching the average.

Syphilis of the Œsophagus.

Even before the invention of radioscopy syphilis of the œsophagus was considered very rare, and now Dr. Guisez, of Paris, has reported to the Academy of Medicine on a series of more than 3000 œsophagoscopies, saying that he has only observed among them one well-established case and one doubtful case of syphilis. The œsophagus is one of the organs that is most rarely attacked by syphilitic lesions, and it would be well to take notice of this fact and to drop the perpetual inclusion of syphilis in the differential diagnosis of the causes of severe stenosis of this tube, leading to the institution and prolongation of treatment which may have ill consequences for the patients. It would seem that the majority of the cases published under the name of syphilis of the œsophagus were simple inflammatory stenosis, an affection which is recognised under œsophagoscopy to be more frequent than has previously been suspected.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives some of the principal statistics of the County Borough of Reading and the Urban District of Finchley for the year 1923:—

Name of borough.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Reading (C.B.)	93,160	18·3	11·1	1·2	1·2	1·6	29	52	6·4
Finchley (U.D.)	47,020	15·6	9·0	0·7	1·5	1·2	23	38	5·4

Reading.

Dr. H. J. Milligan indicates some of the changes in the age distribution of the population revealed by the census—viz., a deficiency in the numbers of children below 10 years and of males at the mid-period of life resulting from the war; and an increasing proportion of persons of advanced years, indicating an increased expectation of life, the result of improving sanitary conditions. Housing conditions, however, do not improve. Of 131 houses erected during 1923, 20 were part of a municipal scheme. The shortage of cottages continues, and many existing "unfit" houses would be closed were there alternative accommodation. The number of applicants for houses is as high as it was two years ago. The death-rate from pulmonary tuberculosis, which fell to 0·89 in 1919, has tended to remain stationary and last year showed an increase to 0·99. Extensive use is made of the 33 shelters provided by the council for open-air treatment and 26 of these were in regular use in the month of December, some in the day-time only. The number of new Reading cases of syphilis and gonorrhœa treated at the clinic during 1923 were 32 and 46 respectively, as compared with 153 and 168 in 1919, the year of maximum incidence. Dellwood Maternity Home continues its eminently successful work. During the year 285 patients were admitted. Of these, 91 came from a one-roomed home, 97 from a two-roomed, and 97 from homes of more than two rooms. Of the latter group 37 were admitted as the patients of general practitioners. Thirty-seven of the patients were admitted free of charge and the remainder paid on the average £1 6*s*. 6*d*. per week. The Home takes trained nurses as pupil-midwives and nine pupils have passed the C.M.B. examination since the training scheme was begun. A considerable proportion of the milk now sold in the borough is "Grade A (Tuberculin-tested)." Dr. Milligan also reports that, although much of the milk sold is subjected to a process of heating, no licences have been issued for the sale of "pasteurised" milk.

The school report includes a comparison of the physique of Reading and American children, much to the advantage of the latter. The methods used and the social status of the children are said to be comparable. Dr. Agnes Bernfeld reports successful results from the treatment of chronic otorrhœa by zinc ionisation. The method has been in force for over three months and 28 cases have been treated. Of these, 20 cases have been apparently cured and the remainder improved. Miss Marion S. Mackinnon succeeded Mr. W. Adderley as school dentist in May, but the increasing number of those who accepted treatment made it impossible to inspect all the schools during the year. It is suggested that the children of parents who consistently refuse treatment should be entirely disregarded and effort concentrated on the 6 to 8 year old groups and the following up of children who regularly avail themselves of treatment. Miss Mackinnon also hopes to enlist the help of the older children and encourage them to interest themselves in the oral hygiene of their younger brothers and sisters.

Finchley.

Dr. Wilson Jameson reports that the joint ownership of the Hornsey Hospital by Hornsey, Wood Green, and Finchley has proved very satisfactory. The question of providing cubicle isolation wards is now under consideration. A motor ambulance for the conveyance of persons injured by street accidents and suffering from non-infectious complaints was purchased in August for £376. From August 10th. 1923, to March 6th, 1924, the ambulance was called out 177 times. The payments received were £95 and the running costs were £56. Both the public and the general practitioners have welcomed the arrangement. The details of the census returns appear to show that Finchley since the war is no worse off as regards housing than it was before the war. This is probably accounted for by the fact that the number of the average family has declined from 4·33 to 3·93. There is, however, more herding of families in houses only intended for one family. Subletting was found in 35·7 per cent. of 646 typical working-class houses; and in the 200 houses erected under the council's assisted housing scheme subletting was discovered in 30 per cent. In Finchley three firms now produce "designated" milk. One firm produces "certified" milk and "Grade A (Tuberculin-tested)" milk; another produces "Grade A" milk; and the third "pasteurised" milk. In January, 1924, milk with no official guarantee was sold in Finchley at 8*d*. per quart, whereas "pasteurised" milk cost 8*d*., "Grade A" milk 10*d*., "Grade A (Tuberculin-tested)" 1*s*., and "certified" milk 1*s*. 2*d*. per quart. The provision of a refuse destructor is still under consideration. In the meantime the old method of burning refuse in heaps at the sewage farm still continues.

In his report as school medical officer Dr. Jameson refers to the great benefits likely to result from the decision of the Education Committee to appoint an organiser of physical training. One of the head teachers who had special qualifications for the post, Mr. G. R. Mellor, was appointed and took up his new duties in November. A good beginning has been made by a survey of the possibilities of the scheme, first, by a questionnaire addressed to all the head teachers, and secondly, by observing all the teachers responsible for physical training at work. This was followed by two introductory lectures—viz., "The School as a Centre of Preventive Medicine," designed to illustrate the comprehensiveness of the term "Physical Education," and its great value both to education and preventive medicine, and a second lecture, largely a résumé of the 1919 syllabus of physical training. The syllabus is now being taken in greater detail at weekly meetings of the teachers. The organiser is, of course, extending his interest to swimming, organised games, and all forms of physical recreation. Altogether the new departure is being taken up with enthusiasm and bids fair to be a great success. The school medical officer conducts the medical inspection of the two secondary schools on behalf of the Middlesex County Council, and has the satisfaction of recording that, mainly owing to the interest shown by the headmasters, all the cases referred for treatment in 1922, with the exception of three, obtained treatment before the end of 1923, and this in spite of the fact that there is no arrangement in force for the provision of treatment in the case of the secondary schools. The school dentist, Mr. G. H. W. Randell, reports that 80 per cent. of the children "referred" presented themselves at the clinic for treatment. He deplores the idea that the average adult still regards dentistry as a form of torture. Probably in these days of painless dentistry and the widespread recognition of the enormous benefits of early treatment, this "idea" is rather the perpetuation of an obsolete joke, which had its origin when dentistry was not what it is now. As Mr. Randell points out, the dread of dental treatment will, in course of time, disappear, and the much appreciated coöperation of the head teachers is a most valuable means to this end.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 26TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely: Small-pox, 124; scarlet fever, 1328; diphtheria, 615; enteric fever, 53; pneumonia, 1674; puerperal fever, 51; cerebro-spinal fever, 10; acute poliomyelitis, 5; acute polioencephalitis, 1; encephalitis lethargica, 212; dysentery, 3; ophthalmia neonatorum, 117. No cases of cholera, plague, or typhus fever were notified. The cases of encephalitis lethargica, 41 fewer than in the previous week, were notified in the following counties: London, 31; Chester, 6; Derby, 9; Devon, 4; Durham, 4; Essex, 8; Gloucester, 13; Kent, 4; Lancaster, 27; Lincoln, 5; Middlesex, 4; Northumberland, 7; Nottingham, 4; Warwick, 27; Yorks W.R., 37; and elsewhere in smaller number.

Deaths.—In the aggregate of great towns, the deaths from influenza fell from 282 to 218. In London the deaths from diphtheria numbered 12, from measles 57 (same as last week), from influenza 21 (a drop of one-half).

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs. J. G. Peebles and L. S. Whitwam are placed on the retd. list.

J. V. Williams to be Surg. Lt.

The following appts. have been notified: Surg. Comdrs. A. F. O. Sankey to R.N. Hospital, Portland; E. L. Markham to the *Castor;* H. E. Perkins to the R.N. Hospital, Bermuda; and A. G. V. French to the *Canterbury*, temp. on commissioning.

ARMY MEDICAL SERVICE.

Col. H. P. W. Barrow, late R.A.M.C., to be Dir. of Hygiene, vice Maj.-Gen. W. W. O. Beveridge.

The undermentioned Maj.-Gens. retire on retd. pay: W. W. O. Beveridge, K.H.P., late R.A.M.C.; and E. M. Pilcher, K.H.S., late R.A.M.C.

Lt.-Col. F. Ashe, from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. and Bt. Col. J. W. West, K.H.S., is granted the temp. rank of Col. whilst empld. as Consulting Surg. to the British Army, vice Maj.-Gen. E. M. Pilcher.

Capt. L. J. Sheil retires, receiving a gratuity.

TERRITORIAL ARMY.

Supernumerary for Service with O.T.C.—Capts. (Local Majs.) P. H. Mitchiner and G. A. Williamson to be Majs.

A. MacPherson to be Lt.

ROYAL AIR FORCE.

Flying Officer K. R. Smith relinquishes his temp. commission on ceasing to be employed.

INDIAN MEDICAL SERVICE.

Maj.-Gen. A. Hooton has been confirmed in the appointment of Surgeon-General with the Bombay Government in succession to Maj.-Gen. W. J. Jennings, K.H.S., on leave, pending retirement. Lt.-Col. W. O'S. Murphy has returned from leave and assumed the appointment of Director of Public Health with the Bombay Government. Lt.-Col. A. W. Tuke, civil surgeon, Ahmedabad, has proceeded on leave.

Dover: New Dental Clinic.—The adult dental clinic presented to Dover by Major J. J. Astor, M.P., will be opened to-day (Friday). Major Astor has undertaken to meet the expenses of the clinic for the first two years, and the staffing and other arrangements have been approved by the town council. The clinic adjoins the municipal buildings.

Correspondence.

"Audi alteram partem."

SIR MALCOLM MORRIS MEMORIAL FUND.

To the Editor of THE LANCET.

Sir,—The death of Sir Malcolm Morris, on Feb. 19th last, marks the passing of one who was widely known and greatly respected, both by his professional colleagues and the public generally, for his work in connexion with dermatology, tuberculosis, public health, and medical literature.

To perpetuate his memory it was resolved at a recent meeting of representatives of the various hospitals and organisations with which he was particularly associated, to endeavour to raise a sum of money sufficient to provide for an annual lecture on the preventive aspects of public health and dermatology. If funds permit it is hoped also to endow a bed for cases of skin disease at St. Mary's Hospital, London. These objects are known to accord with Sir Malcolm Morris's expressed view that the only fitting memorial to a life of successful endeavour is one that carries on the causes to which that life was devoted.

A representative committee has been formed, and we invite contributions, in any amounts, which will be gratefully acknowledged if forwarded to the hon. treasurers, Malcolm Morris Memorial Fund, at 12, Stratford-place, London, W. 1.

We are, Sir, yours faithfully,

Thomas Horder,
Federation of Medical and Allied Services.
E. B. Turner,
British Medical Association.
E. Graham Little,
St. Mary's Hospital.
C. Neville Rolfe,
Nat. Council for Combating Ven. Diseases.
W. Griffith,
St. John's Hospital.
A. E. Hayward Pinch,
Radium Institute.
H. T. Herring,
Cremation Society of England.
N. Howard Mummery,
Hon. Secretary.

May 1st, 1924.

A CRITICAL EXAMINATION OF PSYCHO-ANALYSIS.

To the Editor of THE LANCET.

Sir,—In The Lancet of April 26th Dr. Wohlgemuth suggests that he has been successful in showing that psycho-analysis and its means of penetrating the unconscious is unscientific and fallacious, and that, in common with other psycho-analysts, I am avoiding the main thesis in side-tracking the discussion upon unessential details. As Dr. Wohlgemuth seems to be incapable of understanding the psycho-analytic conception of the unconscious it is difficult to know what kind of proof he requires. He has not employed the technique himself, but presumably knows that associations made by the patient are recorded in plenty and that their reactions have been described. These communications are the proof of the need for the theory. Dr. Wohlgemuth is in the position of a critic of chemical theory who refuses to handle a test-tube. I referred him to one book in which the "test-tube" results are recorded independently of theory. The point of discussion concerning abreaction is one which he raised himself; his denial of results which are confirmed by responsible English physicians is surely evidence of a desire to reject proofs when they are offered. What does he require?

I am, Sir, yours faithfully,

Robert M. Riggall.

Wimpole-street, W., May 3rd, 1924.

THE NARCOTIC ACTION OF PURE ETHER.

To the Editor of THE LANCET.

SIR,—On March 7th I had the honour of addressing the Section of Anæsthetics of the Royal Society of Medicine on the subject of the Narcotic Action of Purest Ether. A short report of this lecture appeared in THE LANCET of March 15th, 1924 (p. 561), and a full account will be published in the Proceedings of the Society.

The starting-point of our research on the narcotic action of various ethers was the statement of Mackenzie Wallis, that purest ether had no narcotic action at all, but was only rendered narcotic by the action of impurities. Of these impurities ethylene and certain ketones of the middle of the series were said to be the most important ones, and consequently a commercial product, "Ethanesal," was put on the market, which was later stated by Wallis to contain 5 per cent. of methylethylketone. Mackenzie Wallis and some others stated that this preparation had a narcotic action superior to that of ether.

In my lecture mentioned above I made the statement—which fully confirmed the former work of Dale, Hadfield, and King—that the purest ether obtainable has the same narcotic action as the ordinary ethers used, whilst also the action of "Ethanesal" did not in any way differ from the action of purest ether. I also mentioned that, as a rule, addition of various impurities to ether did not materially change the *narcotic* action of ether, but that methylethylketone made an exception, in that addition of 5 per cent. of this substance changed the action of ether. On narcotising cats with this mixture I had found that less was necessary to keep the animals in a certain depth of narcosis during an hour than in the case of pure ether. This finding seemed interesting in view of the fact that "Ethanesal" was claimed to contain methylethylketone in this proportion. It was then necessary, however, to investigate the action of mixtures of ether with 5 per cent. of methylethylketone further, paying special attention to eventual toxic actions. After returning from England these investigations were started, but reached an unexpectedly quick conclusion, since we observed that this mixture is extremely toxic. Cats narcotised with it on two consecutive days (or with one day's interruption) usually die. On making a necropsy we found hæmorrhages in lungs, liver, and kidneys, and blood and bilirubin in the urine.

I have felt obliged to make early mention of this result in this way, since in my lecture I had mentioned the *possibility* that addition of methylethylketone to ether might prove to be useful, and I feared that this statement, together with Wallis's claim that "Ethanesal" contains 5 per cent. of methylethylketone, might induce someone to try a mixture of pure ether and 5 per cent. of methylethylketone on men, which would be little short of disastrous.

As far as I can see, the position with regard to "Ethanesal" is as follows: Mackenzie Wallis claimed on successive occasions that "Ethanesal" contains "ketones comprising those in the middle of the series" (THE LANCET, June 4th, 1921, p. 1175) 2 per cent. and later 5 per cent. of methylethylketone (THE LANCET, March 3rd, 1923, p. 428). At the meeting on March 7th he stated again that "Ethanesal" should contain methylethylketone, and read the report of a well-known analyst, who had found ketones in "Ethanesal" to the extent of 1·3 per cent. In commercial "Ethanesal" we, like Dale and his colleagues, found no trace of ketones, but *N*. butylalcohol. (If *iso*butylalcohol had been added, methylethylketone might have been formed.) Now we find that if 5 per cent. of methylethylketone is actually added to purest ether, the mixture proves to be extremely toxic for animals, so that its use in therapeutics would be criminal.

I am, Sir, yours faithfully,

STORM VAN LEEUWEN,
Director of the Pharmacotherapeutical Institute
May 1st, 1924. of the University of Leiden, Holland.

TUBERCULOSIS OF THE LARYNX.

To the Editor of THE LANCET.

SIR,—Sir StClair Thomson's surmise, mentioned in your leading article last week, that "though it would be difficult to make a comparison of the nose and pharynx in sanatorium patients with an equal number of the healthy public . . . trouble in these regions is no more common in a sanatorium than out of it" is, of course, interesting. But what may well be coupled with this is the fact that of the dozen or so of those, from many countries, who *have* made the comparison in question—among them an eminent laryngologist like Moure of Bordeaux—all without exception record great preponderance of such nasal defect in the tuberculous. Sir StClair Thomson's finding that these lesions are not found more frequently in consumptives with laryngeal involvement than in other consumptives tallies with previous experience; and so, I fancy, would his comparison with the normal, were he to make one.—I am, Sir, yours faithfully,

Barnsley, May 3rd, 1924. W. C. RIVERS.

SMALL-POX AND VACCINATION.

To the Editor of THE LANCET.

SIR,—I fear that Dr. J. C. McVail pays the article I wrote in criticism of his address to Members of Parliament a greater compliment than it deserves by devoting five pages to his reply. I am gratified that he should have considered so carefully the various points raised by me, and would thank him for the fair and courteous manner in which he treats me.

Dr. McVail is, of course, a highly skilled and practised controversialist, whose knowledge on this subject is unrivalled. It was not to be expected that any weak, or apparently weak point, however small, in his opponent's case would escape detection. Moreover, he has not confined himself to my article in THE LANCET, but has evidently searched the record of my writings on this subject for the past 22 years pretty closely, and the few slips and inconsistencies that he is able to lay to my charge are not (I hope your readers will agree) very serious.

Many of the points at issue between us I am quite content to leave as they stand in our respective articles for your readers' judgment, but there are some upon which I should like to comment.

1. *Infant Vaccination.*—I am sorry if Dr. McVail thinks that I charged him unjustly with vagueness in the use of the term "vaccination." My complaint, which is against provaccinists as a class and not only against Dr. McVail, is that the term "vaccination" is often used in a different sense when advocating or defending vaccination. If, however, I was unjust in the case in point I regret it.

2. *The Story of Kilmarnock.*—I still think that it is unfair to quote the ravages of small-pox nearly two centuries ago as an argument to justify universal vaccination to-day. For the sake of comparison, suppose a proposition were before Parliament to make anti-typhoid inoculation universally compulsory. Would it be fair to quote the ravages of typhoid fever long ago as an argument for doing so? Surely not!

3. *The Vaccination Acts.*—Dr. McVail says that the question of compulsion or non-compulsion is not for doctors, as doctors, to decide, but for the legislature. Of course, I agree; I have never disputed it; but he goes on to say that "the duty of the medical profession is to inform Parliament and the public of the truth about vaccination, and its safety, and having done so to leave Parliament to deal with the law. . . . If Parliament disbelieves in vaccination it should repeal the Acts. If it believes in vaccination it should exercise some degree of pressure in support of its belief. . . ." (Dr. McVail must forgive me for not quoting the whole passage, but the question of space must be considered.) I should like to suggest that the expression "believes in vaccination," although it sounds so simple, is really

very vague, but I will let it pass. To me the statement recalls the practice of the Ecclesiastical Courts in the old days in trials for heresy. Having found the victim guilty, he was handed over to the "Secular Arm" to be appropriately dealt with. Any odium or responsibility for roasting the heretic then rested on the latter! I suggest that the real moral responsibility for compulsory vaccination rests with the medical profession and not with Parliament, and that it is owing to the manner in which the case for vaccination is presented to them by the medical profession that our legislators believe—sometimes even more strongly than the profession does itself—in the necessity for compulsion.

4. *Individual and Communal Protection.*—Dr. McVail says that the analogy I draw between the old practice of small-pox inoculation and the modern practice of vaccination is a false one because inoculation was infectious whilst vaccination is not. I submit that though vaccination may not be infectious, yet nevertheless it does tend, by masking the disease, to encourage the spread of small-pox, and therefore that the analogy is perfectly valid.

5. *Germany.*—Dr. McVail draws attention to the fact that my views as to the value of the German system of universal vaccination and revaccination have undergone some change. I admit the impeachment. In the light of Germany's unexpected experience with small-pox during the past few years I imagine that others besides myself have had to modify their ideas to some extent about the effectiveness of the German system. We used to think—at least we used to be taught—that owing to universal revaccination in Germany it was possible to dispense with special small-pox hospitals and that ordinary general hospitals could safely be used for such imported cases as might from time to time occur. I am beginning seriously to doubt this. I still believe as firmly as ever that if a whole community (without exception) be vaccinated and revaccinated *often enough*, that community has nothing to fear from small-pox; but I am beginning to doubt if it is really practicable to vaccinate and revaccinate a whole community, without exception, often enough. In any case it is rather a heavy price to pay. In the meantime, until we know a little more about the details of Germany's recent experience, I, personally, shall certainly not feel justified in quoting the German system so confidently as I did in 1911.

6. *Temporary Protection.*—Dr. McVail says that when I state that the immunity enjoyed by small-pox nurses is not evidence that infant vaccination protects the community I am denying "what no human being in his senses ever dreams of asserting." Whilst this may be literally true, nevertheless the argument from the immunity of small-pox nurses is used more often than any other to establish and support "belief in vaccination," and, that being accomplished, the need for infant vaccination is supposed to follow as a logical corollary. Indirectly, then, the immunity of small-pox nurses is certainly used as a strong argument for infant vaccination. (In this connexion I think that the antivaccinists are largely to blame. Most of them appear to base their case against vaccination on the ground that its supposed power to immunise against small-pox is a myth and a delusion. The provaccinists naturally reply by proving that it does immunise, and the immunity of small-pox nurses and doctors is the strongest possible evidence of this.)

7. *Absent Small-pox.*—Because I draw attention to the fact that small-pox prevalence and mortality have greatly declined during the past two decades, in spite of the simultaneous great decline in infant vaccination, Dr. McVail accuses me of adopting "one of the most obvious sophistries of the present-day antivaccinist." Here he does me a clear injustice. The antivaccinist asserts that "the less vaccination, the less small-pox." I have never done that. I agree, of course, with Dr. McVail that the true relationship is "the less small-pox, the less vaccination." But I do say—and I cannot think that Dr. McVail really differs from me in this—that such a conjunction, continued over a long period of years, enormously weakens the provaccinist claim that the reduced prevalence and mortality of small-pox are due, or even chiefly due, to infant vaccination.

8. *Tetanus and Vaccination.*—Under this heading Dr. McVail makes the most of two statements—neither of them at all material—once made by me on hearsay evidence, and which I afterwards admitted were erroneous. I do not complain. One cannot be too careful in verifying one's facts.

9. *Leicester.* (*a*) *Unfulfilled Prophecy.*—Dr. McVail complains that I have on several occasions (at least four) quoted his famous prophecy, published in "Vaccination Vindicated," when I have been referring to the Leicester experiment. I sincerely regret if my having done this has caused him any annoyance. I can assure him that I have quoted him so often solely because his prophecy, made in such a standard provaccinist text-book, so aptly and authoritatively expresses the view almost universally held by the medical profession when the Leicester experiment was begun as to what the result of the experiment would be. Such a quotation is valuable as proving the importance attached to the Leicester experiment at that time. Let me say further that I have not the slightest doubt that, had I then been a qualified medical man, I should myself have heartily endorsed Dr. McVail's prophecy which, in the light of the beliefs then held, was a perfectly reasonable and justifiable one. A more serious charge is that I have been guilty of "mangling" the passage in which the prophecy occurs. I admit that deliberately to cut out parts of a quotation with the object of distorting its meaning is a serious offence, but I suggest that all I have done was to shorten a rather lengthy passage by omitting a sentence (and indicating the omission) which I honestly considered was not material. Even with this omission the passage as quoted ran (in my book) to over 100 words. As regards his complaint that I have continued to give the abbreviated quotation since he took exception to it in his Milroy Lectures I can only say that it was unintentional. I read his Milroy Lectures, and very interesting they were, but either I overlooked this particular point, or had quite forgotten it. I will certainly be careful to observe his wishes in future and to give the passage in full.

(*b*) *The Method.*—I do not think that Dr. McVail is quite fair to me here, but will let it pass.

(*c*) *Mild Small-pox.*—I recognise that there is some justification for Dr. McVail's criticism of the statement in my book, "The Vaccination Question," p. 125, in which I attribute the progressive decrease in the fatality of the last four principal Leicester epidemics to the influence of sanitation, at least so far as the last two are concerned (between the second and third there was, as he points out, no appreciable reduction). If and when the book calls for a second edition I will modify the statement, and I thank Dr. McVail for drawing my attention to it, but the point has, of course, no direct bearing on my LANCET article.

In conclusion, may I express my warm personal regard for Dr. McVail, and my admiration and respect for his encyclopædic knowledge—the result of life-long study—of this question of small-pox and vaccination, especially on its historical side.

I do not think that there is really so much difference between us—at least not as regards fundamentals—as might appear on the surface. I, on my side, am inclined to think that the time has come when all that remains of compulsory vaccination might safely be discarded (in this country) and that some advantage would be gained thereby. He, on the other hand, does not think that that time has yet arrived, though he admits (in his Milroy Lectures) the possibility that it may come some day. Possibly I err on the side of over-confidence, or it may be that he is unduly cautious. Which view is right is for your readers to judge.—I am, Sir, yours faithfully,

Leicester, April 26th, 1924. C. KILLICK MILLARD

MYELOMA OF THE ALVEOLUS.

To the Editor of THE LANCET.

SIR,—In the last issue of THE LANCET Mr. P. B. Kittel reported an interesting case of myeloma in the upper jaw of a boy of 5½, commenting on the infrequency of this condition at that early age. By coincidence, a boy aged 13, has just been discharged from this hospital after operation for a similar condition. A small, warty growth appeared on the hard palate close to the alveolar margin some 12 months ago, since when it gradually increased in size. On admission there was a circular pedunculated papilloma about half an inch in diameter, with a smooth, flat, dark-red surface and rounded edge, growing apparently from the periosteum of the alveolar process between the first and second right bicuspid teeth, both of which were sound. X ray showed no osseous lesion. The tumour was freely excised by Mr. Arthur Cooke and on section showed the stroma and multinucleated cells typical of a myeloid sarcoma.

I am, Sir, yours faithfully,
ARTHUR B. SMITH, M.B., Ch.B. Edin.,
House Surgeon, Addenbrooke's Hospital,
May 5th, 1924. Cambridge.

MATERNAL MORTALITY IN CHILDBIRTH.

To the Editor of THE LANCET.

SIR,—To those of us who have been striving for the better education and training of the midwife, your leading article of April 19th with this title appears to give an entirely wrong impression of Dr. Janet Campbell's recent report (No. 25 of the Ministry of Health). Your article states: "Since the passing of the Midwives Act in 1902 it is a matter for regret that so little improvement, if any, has been noted in the maternal statistics. In a series of 256 unselected cases of puerperal fever recorded by Dr. Campbell, in an appendix to her report, it is noted that 102 cases occurred in the practice of midwives alone, as against 86 in which delivery was effected by a doctor"

What improvement in the maternity figures has taken place began at the beginning of this century, and though the Midwives Act came into force after then the improvement was maintained, reaching its maximum in 1917 to 1918, when the medical services were at their lowest and more work than usual was done by midwives. The disappointing high mortality of 1919 and 1920 was doubtless due to other causes than that of the type of the attendance on labour, and since then the figures have fallen near to the lowest level attained during the war.

The series of 256 odd cases from different districts given in Dr. Campbell's appendix, from which the conclusion is drawn that most cases occurred in the practice of the midwife, is particularly unjust. Those figures are clearly valueless for the purpose for which they are used. They are opposed to Dr. Campbell's own conclusion in regard to the relative responsibility of doctors and midwives, for she says: "There seems little profit, however, in attempting to apportion relative responsibility or blame" (p. 44). A much more reliable set of figures, given on page 32, are those of nearly 50,000 from the Q.V.J.I. midwives (undoubtedly a specially skilled body of women) with an average rate of 1·8 per 1000, or half the general rate for the country.—I am, Sir, yours faithfully,

Wimpole-street, W., May 6th. JOHN S. FAIRBAIRN.

DONATIONS AND BEQUESTS.—The late Mr. George Taylor Chadwick, of Harrogate, Yorks, left by will, among other bequests, £1000 to the Rochdale Infirmary.—The following bequest has been made under the will of the late Miss Amelia Halkett, of Ryde, Isle of Wight, and of Pitfirran, Fife: £1000, free of duty, to the Royal Isle of Wight Hospital to endow an "Arthur Halkett" bed or cot in the children's ward in memory of her nephew.—Miss Henrietta Emma Reeve, of Regent-terrace, N.W., left £2000 each to the Royal Free Hospital and to the Royal Hospital for Incurables, Putney; also £2000 to her medical attendant, Alfred Alexander Cummin Grant, in recognition of his kindness and attention to her late uncle, Charles Reeve, and herself.

Obituary.

FRANCIS WILLIAM CRAGG, M.D., D.Sc. EDIN.

BY the death on April 23rd from typhus, at the early age of 42, of Major F. W. Cragg, I.M.S., Assistant Director, Central Research Institute, Kasauli, the science of medical entomology has lost one of its ablest workers, and the Indian Medical Service a distinguished officer. It is tragic to recall that only a little more than two years ago this fell disease claimed as its victim another distinguished worker, Mr. A. W. Bacot. Details regarding the circumstances under which Cragg contracted the disease have not yet reached this country, but evidently he was deputed to investigate its ætiology (still a mystery) at Lahore, and, like Bacot, Cragg was alive to the danger of handling infective body lice, or coming into contact with lousy patients, but in some way at present unknown the virus passed into his system with fatal results. Every worker in this branch of experimental medicine knows only too well how easy it is to be bitten, or in some other way infected while handling large numbers of infective insects.

Francis William Cragg graduated M.B., Ch.B. in Edinburgh in 1905, and shortly after entered the Indian Medical Service. After a lengthy tour of military duty he came to Edinburgh on leave in 1910. He attended Prof. Ashworth's class of medical entomology and parasitology, giving much attention to zoological technique, and later under his direction took up the study of insect anatomy. His thesis for the degree of M.D., on "The Structure of *Hæmatopota pluvialis*," for which he was highly commended, is a model of descriptive anatomy. This piece of research was the foundation of Cragg's future work on medical entomology. Morphology, especially comparative morphology rather than systematic, was his bent, and he was a master of his subject. He was also deeply interested in the relation of insects to disease, and was well equipped to undertake research into the life-histories and methods of transmission of parasites. His knowledge of insect structure and of protozoology enabled him to avoid the many pitfalls in this particular line of research.

After returning to India in 1911 he applied for civil employ in the Jail Department, but soon found the work uncongenial, and then asked to be transferred to the Bacteriological Department. He was sent to the King Institute of Preventive Medicine, Guindy, Madras, where the writer first met him. At Guindy, with little routine work and unlimited material close at hand, Cragg was able to extend his knowledge of the comparative morphology of insects associated with or likely to be associated with disease-causing organisms. As a result of these researches he published a series of papers on "Studies on the Mouth Parts and Sucking Apparatus of the Blood-Sucking Diptera." These papers represent some of Cragg's best work on insect morphology, and show how quickly he arrived at an accurate interpretation of the mechanism of the parts studied. His beautiful line drawings enhance the value of these papers. At Guindy he also collaborated with the writer in several papers on descriptive entomology and bionomics, and one of these is the first paper in Volume I. of the *Indian Journal of Medical Research*. It was at Guindy that our joint work on "Medical Entomology" was conceived, planned, and carried out. Cragg's anatomical sections and his line drawings added greatly to the usefulness of the book as an introduction to the study of entomology. The completion of this work in about two years was only possible with Cragg's loyal coöperation.

In 1912, at his own request, Cragg was transferred to the Central Research Institute, Kasauli, where he continued to work until his death. It is possible here to mention only a few of his papers embodying original research of a high order in medical entomology; most of the papers will be found in the volumes of the *Indian Journal of Medical Research*. His studies of the reproductive system of *Cimex*, with special reference to the behaviour of the spermatozoa, attracted considerable attention. The discovery by the writer of the method of copulation in *Cimex*, and its demonstration to Cragg, led him to investigate the interesting and peculiar phenomena connected with fertilisation in the common bed-bug. This work of Cragg opens up an entirely new field of inquiry. His observations on the geographical distribution of the Indian rat-fleas as a factor in the epidemiology of plague is a valuable piece of work. If it is eventually proved that the rat-flea *Xenopsylla astia* plays no part in the spread of the bacillus of plague, then Cragg's work will be of the utmost value in the fight against plague in India.

In his studies of the spread of parasitic diseases Cragg soon recognised the importance of relapsing fever as a factor to be reckoned with in the mortality returns of India. His paper on relapsing fever in the United Provinces and Oudh focused attention on the disease. During his investigation at Agra he contracted relapsing fever, and had to take leave to this country. He went to Edinburgh and, although poor in health, worked again in the zoological department at several problems, and obtained the degree of D.Sc. in 1922. On his return to India towards the end of 1922 he set to work on several important problems connected with the bionomics of fleas, lice, and the bed-bug, and he looked forward later to return to the investigation as to whether the flea *Xenopsylla astia* plays any part in the transmission of the bacillus of plague. But this was not to be.

Major Cragg was a fearless investigator, and he gave promise of adding much to our knowledge on insects in relation to disease. His loss is irreparable. A cheery companion, he will be sorely missed by his many friends.

To Mrs. Cragg, who was not able to be with her husband in his last hours, and to his two fatherless children, the deepest sympathy of the medical profession will be extended.

W. S. P.

GRANVILLE STANLEY HALL, Ph.D. Harvard, LL.D.

Dr. G. Stanley Hall, President Emeritus of Clark University at Worcester, Massachusetts, who died on April 24th, was born in 1845 of that New England stock which carries almost no infusion of other than English blood, and his boyhood was lived in straitened circumstances, but among the traditions associated with a Puritan upbringing. Following upon a college education in America he was enabled by far-seeing friends to spend three years of study in Germany, and, after holding a professorship at Antioch College and doing tutorial work at Harvard, he made a second long visit to Europe when he studied under Wundt, Ludwig, and Helmholtz. Then followed a professorship of psychology and pædagogy at Johns Hopkins University, and in 1888 he became head of the newly formed Clark University at Worcester. The difficulties of this position, when loyalty to the founder demanded a silence on vital matters which for a time alienated Stanley Hall's personal friends as well as those American scholars who had been attracted by the academic ideals of the new foundation, have only lately been made known, but the faith of a few saved the venture, and on his retirement in 1920 he could look back with pride upon its achievements.

Although his name was known to only a small circle in this country, Stanley Hall stood as a pioneer of psychological study in America. He was the first President of the American Psychological Association, and founded the *American Journal of Psychology* and the *Journal of Applied Psychology*. Last year he published, under the title of "Life and Confessions of a Psychologist," an analytical autobiography which revealed how his study of mankind, of man's place in nature, his origin and destiny, had become to him a source of almost religious comfort. He is, perhaps, best known to us by his work on "Adolescence," which appeared in 1904, and still stands well above the flood of literature on that or kindred subjects. Though never losing interest in experimental psychology, he was already becoming impatient with scholasticism, and even then wrote scornfully of "a bankrupt psychology without a soul," whilst demanding that the study of the mind should make contact with life at as many points as possible. Psychology touches so many of our beliefs and prejudices that he inevitably raised bitter criticism. He speaks in his "Life and Confessions" of the *odium sexicum* roused by his pre-analytical work on "Adolescence," and when he turned to psychoanalysis as to a new dispensation in normal psychology he was for more than a decade, as he expresses it, little more than *vox clamantis in deserto*. He himself regarded his best work as being the elaboration of the genetic view of mental development; introspectionists, behaviourists, and anti-psychoanalysts were for him in the pre-evolutionary stage through their failure to appreciate that the soul is as much a product of evolution as the body.

The *American Journal of Psychology* so recently as last January spoke of "this modern Aristotle," and expressed the hope of his former students and the friends of learning everywhere that he would be spared to finish those volumes he contemplated to complete his system. But Stanley Hall had already shown a calm expectation of the end when, after setting out his desire to accomplish something really worth while in the world, he wrote: "Yet all the time I know that the Supreme Queller may at any time now intervene and cut down all these aspirations as the mower does the last lush crop of rowan before the snow and ice of winter kill it at its very roots."

CHARLES ROBERT GRAHAM, M.R.C.S. Eng., L.R.C.P. Edin.

It was with great regret that the public of Wigan and surrounding districts heard of the death of Dr. C. R. Graham at the age of 67. Dr. Graham for over 40 years conducted an extensive practice in Wigan, and in 1919 he retired to Bolton-le-Sands, near Carnforth, where his death occurred on April 27th. After a general education at Wigan and Annan, he studied medicine at Owens College, Manchester, and at Paris, taking the M.R.C.S. Eng. and L.R.C.P. Edin. in 1878. Before commencing practice in his native town of Wigan, he acted as senior house surgeon at the Royal Berkshire Hospital, Reading, and as resident medical officer at the Hospital for Children at Pendlebury, Manchester. For 34 years he was one of the honorary surgeons to the Royal Albert Edward Infirmary, Wigan, and for other seven years was consulting surgeon to the same institution, thus establishing a record of 41 years' association with the Wigan Infirmary. For many years he acted as one of the surgeons of the Lancashire and Cheshire Miners' Permanent Relief Society and as medical adviser to other societies. He was a keen and expert angler and was regarded as an authority on fly-fishing. Dr. Graham leaves a widow, three daughters, and a son. One daughter and his son are members of the medical profession. Dr. Graham was held in the highest esteem in Wigan, and to many his death will come with a keen sense of personal loss.

EDWIN BEATON, M.D. Camb.

Dr. Beaton, who died of pneumonia in Cairo at the early age of 43, was bacteriologist to the Public Health Department in that city. Son of the late Mr. Edwin Beaton, formerly chief constructor at the Admiralty, he was educated at Caius College, Cambridge, going on to St. Mary's Hospital. He took his Conjoint Board Diploma in 1906 and his medical degree at Cambridge in 1909. In 1923 he took the M.A. and M.D. degrees. After filling one or two house appointments at St. Mary's Hospital he joined the staff of the inoculation department, where he worked until, a few months before the war, he was appointed to the laboratory staff of the Egyptian Public Health Service under Dr. Charles Todd. He continued in this service until his death. A colleague writes from the inoculation department, St. Mary's Hospital: "Edwin Beaton was held in affectionate regard by all those who worked with him here—and no less, as we well know, by his colleagues in Egypt. He joined us in 1910, and set to work on problems connected with the antitryptic power of the blood, which was just then beginning to attract attention. After much careful work on the elaboration of accurate micro-methods of measuring this function of the serum he applied these to the study of a great variety of pathological conditions. Probably he was the first to recognise the important fact that an increased antitryptic power is associated with every infection. Unhappily, he was too little anxious to publish his work—an expression of his very reserved nature—and in consequence a great many valuable observations lie buried in his note-books."

Throughout the war Beaton was kept fully occupied with the routine public health work of his department, but with the return of peace conditions he again turned his attention to the nature of the antitryptic power, publishing his observations in the *British Journal of Experimental Pathology* (1922, iii., 224). His M.D. thesis (not yet published) makes a further contribution to the same subject.

ARTHUR JOHN NYULASY, L.R.C.P. EDIN., M.R.C.S. ENG.

Dr. Nyulasy, who died recently at his brother's house in Melbourne, was well known as a surgeon and gynæcologist in Western Australia. He started life with the intention of becoming an engineer and obtained his certificate as surveyor before entering the Melbourne Medical School. He completed his medical studies at various centres in Europe, qualifying L.R.C.P. Edin. in 1890, and taking the English Conjoint qualification in the following year. Returning to Australia, he became assistant to his brother, Frank, at Toorak, Melbourne, migrating later on account of his health to Perth, where he built up a large general practice. He first attracted notice by a successful investigation into the origin of an epidemic of typhoid then prevalent in the district. During the South African War he served as medical officer with the contingent from Western Australia, and on his return was elected to the staff of the Perth Hospital, where he became in succession out-patient surgeon, surgeon, out-patient gynæcologist, and gynæcologist. Dr. Nyulasy retained throughout life his interest in anatomical study, and from the time of the Australasian Medical Congress in 1908 made it his endeavour to establish the view that the primary supports of the uterus are its ligaments, the pelvic diaphragm acting as a secondary support to prevent undue stretching of the ligaments from intra-abdominal strain. He took much time and trouble to familiarise his colleagues in Australia with recent advances in gynæcological technique. He stood for early operation in pelvic septic phlebitis, holding that serious cases of puerperal infection might be saved by early excision of the thrombosed veins. He was an advocate of the intestinal route of drainage in septic peritonitis, and recorded in our own columns in 1915 a series of six cases successfully so treated. He also described an original method of treating prolapse of the female bladder.

Dr. Nyulasy was a man of artistic tastes with some ability as a musician, whose loss leaves a gap among a large circle of medical and other friends in the Commonwealth. His death was due to malignant disease of the stomach, borne with great fortitude.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—At a meeting of Comitia on April 24th licences to practise were conferred upon the following candidates who have passed the Final Examination of the Conjoint Board :—

S. Abadir, King's Coll.; A. H. Abdel-Messih, Cairo and Manchester; M. C. V. Abraham, Manchester; J. N. Alexander, Guy's; H. G. Anderson, St. Bart.'s; J. H. Anderson, Manchester; F. Asker, R. T. Bannister, and V. Barkin, St. Bart.'s; P. Bauwens, St. Thomas's; Margarida R. Bensaude, Birmingham; M. Bersinski, Middlesex; H. B. Boucher, St. Thomas's; W. H. Bradley, Oxford and Guy's; R. A. Brews and S. G. Brown, London; J. R. Burrows, Liverpool; Edna V. Butler, Bristol; L. W. Cann and R. J. Cann, Guy's; J. A. Carman, London; A. M. Claye, Leeds; H. G. Close, Guy's; G. E. C. Collis, Univ. Coll.; R. F. Connell, Middlesex; Elizabeth M. Cowie, Royal Free; D. V. Davies, St. Thomas's; G. I. Davies, Univ. Coll.; Gwladys D. Davies, King's Coll.; E. C. Dawson, Birmingham; J. R. B. Dearden, Cambridge and St. Bart.'s; C. J. C. de Silva, Liverpool and Middlesex; C. H. Devereux, Univ. Coll.; B. Dous, St. Bart.'s; Ethel Downing, Royal Free and St. Mary's; E. F. Duck, Univ. Coll.; W. L. Dunlop, Liverpool; W. H. du Plessis, St. Thomas's; Kathleen H. Durance, Royal Free; L. C. Edwards, London; W. S. D. Elder, St. Andrews and St. George's; C. L. Elgood, Oxford and St. Bart.'s; A. Elliot-Smith, Cambridge and Univ. Coll.; S. W. Eveson, London; H. B. Flooks, Cardiff and Guy's; J. H. Francis, Cambridge and St. Mary's; A. T. Fripp, Oxford and Guy's; E. B. Garrett, Univ. Coll.; A. Gilberg, Middlesex; J. F. Goodenough, Guy's; C. A. H. Green, Oxford and St. Bart.'s; J. L. Griffin, Bristol; N. W. Hammer, Middlesex; I. Harris, Cardiff and Westminster; Greta Hartley, Royal Free; H. N. Hearle, Guy's; F. Heckford, St. Bart.'s; E. F. Hewlitt, Guy's; R. A. Hickling, Westminster; Florence R. Hodges, Royal Free and St. Mary's; Barbara M. Hope, King's Coll.; Margaret Hossell, Royal Free; L. W. Houghton, Guy's; D. V. Hubble, St. Bart.'s; M. W. P. Hudson, St. Thomas's; W. S. Hunt and I. M. Hurwitz, Guy's; Dorothy P. Hytch, Royal Free; E. Jacobson, Cape and London; J. P. W. Jamie, Cambridge and St. Bart.'s; D. Jones, London; D. S. M. Jones and H. M. R. Jones, Middlesex; I. S. Jones, Liverpool; R. Jones, Birmingham; A. Jowell, Cape and Guy's; Dorothy L. M. Keats, Royal Free; H. N. C. van G. Kelaart, Ceylon; A. C. King, London; F. H. King, Cambridge and St. Bart.'s; J. H. Kok, Utrecht and Middlesex; R. Langford, Cambridge and London; O. B. Lean and H. Lord, Univ. Coll.; Elsa P. Lunn, Birmingham; W. J. E. Lupton, Oxford and St. George's; E. M. McCausland, Middlesex; Lily C. MacKinnon, Charing Cross; W. W. McLean, Cambridge and St. Thomas's; J. G. McMenamin, St. Bart.'s; D. Magrath, Birmingham; Dorothy B. Marling, Royal Free and London; D. G. Martin, St. Bart.'s; W. A. Mill, Guy's; K. F. T. Mills, Cambridge and Middlesex; G. G. Milne, London; S. M. Milner, Cambridge and Manchester; W. E. Moody, Bombay and St. Mary's; G. O. Morgan, Cardiff and King's Coll.; E. G. Morris, Cambridge and St. Thomas's; Ethel W. Morris, London; L. N. Moss, Cambridge and St. Mary's; B. S. Mote, Bombay; G. Murray Shirreff, Bristol; M. Nazmi, Cairo and Univ. Coll.; E. V. Newling, Middlesex; Nancy B. Ockenden, Univ. Coll.; Doris M. Odlum, Royal Free and St. Mary's; G. F. S. Parker, Manchester; K. O. Parsons, Guy's; E. A. T. Pateman, Calcutta and Charing Cross; J. N. D. Paulson, Edinburgh and St. Mary's; J. F. Payan, Guy's; T. Peirson, Manchester; A. Perkoff, London; E. B. Pollard, St. Bart.'s; Winifred M. Proctor, Durham; Eleanor M. Pulleine, Royal Free and St. Mary's; F. K. B. Quanbrough, Bombay and St. Bart.'s; G. Ralston, London; M. A. Rana, Punjab and St. Mary's; R. H. T. Rea, Cambridge and St. Thomas's; T. S. Read, Cambridge and King's Coll.; Dorothy M. Rees, King's Coll.; E. J. Rees, Cardiff and St. Thomas's; C. B. Rich, Charing Cross; W. M. Roberts, Manchester; F. Robinson, Durham and Manchester; R. E. Robinson, Guy's; Dorothy W. Roughton, Royal Free and London; F. E. E. Schneider, Univ. Coll.; M. B. Seng, Guy's; T. H. Sims, Cambridge and St. Thomas's; I. Spiro, Liverpool and Univ. Coll.; C. R. Steel and G. G. Stewart, St. Bart.'s; M. H. Steyn, Amsterdam and St. Thomas's; G. E. F. Sutton, King's Coll.; H. Taylor, London; J. H. G. Thompson, Cambridge and St. Thomas's; P. H. T. Thorlakson, Manitoba; W. G. Thwaites, St. Thomas's; R. J. Toleman, Cardiff and London; A. Tom, Guy's; Mary M. Turnbull, King's Coll.; Cicely N. Twining and Hermione M. Usborne, Royal Free; G. M. Wadsworth, Leeds; J. L. Warner, Cambridge and Middlesex; P. B. Wilkinson and T. M. Wilks, King's Coll.; D. H. Williams, London; G. Williams, St. Mary's; Dorothy Wood, Charing Cross; T. E. W. R. Wood, B. H. H. Wooderson, and H. G. Wyatt, London; and Z. M. Yusuf, St. Bart.'s.

Diplomas in Tropical Medicine and Hygiene were granted, jointly with the Royal College of Surgeons of England, to the following candidates :—

Monawar Khan Afridi, Edward H. Black, Surendranath E. Borah, Clifford V. Braimbridge, Nariman Hormusji Clubwala, Anant Yashwant Dabholkar, Mary Ellison, Lily G. Iliff, John G. Johnstone, Frederick Stevenson, and Edward S. Walis.

Society of Apothecaries of London.—At examinations held recently the following candidates passed in the subjects indicated :—

Surgery.—H. L. Bernstein, Guy's Hosp. ; P. V. Casling, St. Mary's Hosp. ; E. J. R. MacMahon, St. Thomas's Hosp. ; I. Morgan, St. Mary's Hosp. ; W. T. Swanton, Univ. Coll., Cork, and Charing Cross Hosp. ; and W. J. Wood, University of Leeds.

Medicine.—F. Beinaschewitz, University of Bern ; R. Hare, St. Mary's Hosp. ; W. M. Jones, St. Bart.'s Hosp. ; J. N. Wheatley, London Hosp. ; and W. J. Wood, University of Leeds.

Forensic Medicine.—W. B. Arnold, St. George's Hosp. ; A. J. M. Davies, St. Mary's Hosp. ; J. Herbert, Guy's Hosp. ; W. R. S. Jaecques, Louvain and Ghent ; and J. N. Wheatley, London Hosp.

Midwifery.—E. H. Boodrie, St. Mary's Hosp. ; W. R. S. Jaecques, Louvain and Ghent ; A. Kotbi, St. Mary's Hosp. ; D. G. Robinson, Guy's and Charing Cross Hosps. ; and G. H. Shanley, Durham.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery : P. V. Casling, W. M. Jones, E. J. R. MacMahon, I. Morgan, D. G. Robinson, J. N. Wheatley, and W. J. Wood.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow.—The following candidates have passed the Triple Qualification Examination and have been admitted as licentiates :—

Wilfred A. Bartholomeuz, Douglas M. Beaton, John S. Caldwell, Matthew Clouts, John C. Colvin, James Courtney, Charles J. Coventry, Frederick W. Duthie, Herbert M. Hobson, Bruce F. Home, William D. Howat, John A. A. Hunter, Morris Kelman, Douglas J. Kynoch, Douglas D. O. M'Loughlin, Harry Myers, George C. Philips, William J. Rankine, Frederick W. Robinson, Israel Rostowsky, Robert D. Scorgie, Geoffrey H. Sellers, and Annie H. Sutherland.

University of Glasgow.—At the graduation ceremonial on April 23rd the following degrees were conferred :—

M.D.—Margaret H. Grant (with commendation), John M. W. Morison (with commendation), Thomas D. Miller, and Elaine B. S. Stocquart.

M.B., Ch.B.—With honours : William Thomson, Henry S. Russell, and David Hynd. With commendation : Andrew S. Barr, Francis D. Morphy, John Montgomery, Thomas A. Fyfe, John C. Alexander, Robert Graham, Adam D. Mack, Robert A. Kennedy, Archibald Brown, James Ross, John G. M'Whirter, James Morison, Hector Macdonald, Charles M. Brown, Robert Black, John A. M'Gregor, James M'Fadzean, Kenneth A. Mackay, James C. Gillies, Robert G. Cochrane, and John Adam.

Robert H. Abercrombie, William G. Allan, Margaret M. Allison, Janet H. Anderson, John Anderson, William C. Armstrong, William G. Arthur, John W. Baxter, Samuel Baxter, Mary V. F. Beattie, John Beck, John S. Bell, Marion H. Black, Andrew Bowie, Janet S. Brooks, Alexander Brown, Andrew Brown, David K. Bruce, James Caldwell, Alexandrena F. Cameron, Douglas Cameron, Duncan MacG. Cameron, Robert M. Chalmers, George Collier, Hew B. Cordiner, Arthur L. Cowan, James Crawford, Janet I. A. Cullen, John Cumming, Donald E. S. Cunningham, Robert E. Davie, Slavoljub S. Djordjevitch, Robert S. Doig, Robert S. Donaldson, Lily S. Duncan, George H. Edgecombe, Norman F. Edgecombe, Harold Fairbairn, Christina G. Findlater, Donald MacD. Fraser, Thomas Fulton, Finlay MacR. Fyfe, Lachlan H. Gilchrist, William Gilchrist, William Gillespie, William N. M. Goldie, Oliver Gray, Robert A. Gray, Andrew A. Grierson, Gordon L. Grieve, Reginald K. Hanlin, David M. Harper, William A. Harper, Thomas Heffron, John D. Hempseed, Gertrude Henderson, Mary Hendrie, John W. M. Humble, Alexander M. Innes, George C. Kelly, Duncan L. Kerr, Hugh F. Kerr, Ralph A. W. Kerr, William A. Kerr, Alexander Kirk, William E. Laing, Sarah D. Lamb, Angus Lamont, James R. Langmuir, Andrew Law, Edwin S. Lawrie, Erik W. Lindeberg, Stuart Lindsay, John Lithgow, Thomas C. Lonie, William M'Adam, Eric M. MacAlpine, Peter A. M'Arthur, Archibald Macbeth, John M'Bride, Charles C. M'Callum, Michael M'Cann, Robert B. M'Coll, Edward W. M'Cormick, Ian J. M'Cormick, Ian M'Cracken, Alistair M'Crone, Archibald W. M'Crorie, John Macdonald, Kenneth M. Macdonald, Roderick Macdonald, James W. M'Gowan, Charles L. M'Harg, Douglas D. M'Ilvean, Alexander Macinnes, Richmond M'Intosh, William M'Intosh, Donald N. Mackinnon, Edward J. MacKinnon, Allan Maclaine, Alan H. Maclean, Angus Maclean, Angus J. M'Lellan, William A. M'Lennan, Katharine G. C. Macleod, Peter J. Macleod, Archibald Macmillan, David B. M'Millan, John S. M'Millan, Robert J. M'Nab, Ronald M. Macphail, Donald M'Phee, Loudon MacQueen, John A. M'Quistan, Florence C. Macrae, David M. M'Swan, Archibald R. M'Whinney, Andrew V. Magee, William B. G. Mair, Andrew Marshall, Rhoda W. Marshall, Walter M. Martin, James A. Matheson, Felix P. Meehan, Mary A. J. Melville, George A. Mitchell, John O. Moffat, David A. Montgomery, Shiona A. Muir, James H. Murdoch, John M. Murray, Frederick J. Newall, John W. Nicolson, Murdo Nicolson, Hugh C. Orr, Elsie H. Parker, Thomas Paton, William Patrick, Elisabeth A. Pennycuick, Findlay Pettigrew, Robert W. Rae, James S. Ralston, William A. Ramsay, Archibald K. Rankin, Benjamin Reid, George S. Reid, Robert H. Reid, Robert H. Reid, Andrew C. Richmond, Alexander Robertson, Alexander M. Robertson, James Scott, Walter J. Scott, William Shankland, Thomson D. Shanks, George I. Shaw, John S. Smith, William S. Stephen, Adam Stewart, Hugh Stewart, James P. Stewart, Mary L. Stewart, Thomas T. Stocker, George J. Summers, Alison L. Taylor, George L. Thomson, James M. Thomson, Jared Totten, Dorothy A. Towart, James G. S. Turner, John W. Tweddle, Adeline G. Vallance, William B. Wallace, James A. Watson, Douglas J. B. Wilson, George L. Wilson, John W. Wilson, Sarah B. Wilson, Ruby E. Winning, Robert M. Wylie, Ida Wyllie, and James W. Young.

The Prince of Wales has become Patron of the London Homœopathic Hospital, Great Ormond-street, W.C., and the Duke of York President, in succession to Lord Cheylesmore, who becomes Vice-President.

Medical Prayer Union.—The annual medical missionary breakfast will be held on Wednesday, May 14th, at the Refectory, University College, Gower-street, W.C., at 8 a.m., under the presidency of Mrs. Scharlieb, M.D. An address will be given by Dr. J. A. Liley, of Tangier. An intimation of intention to be present will be welcomed by Dr. Tom Jays, the hon. secretary, Livingstone College, Leyton, E. 10.

Medico-Psychological Association.—The next quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland will take place on May 22nd, at 11, Chandos-street, Cavendish-square, London, W., under the presidency of Lieut.-Colonel E. Goodall, at 2.30 p.m. Dr. J. Carswell will deliver the Fifth Maudsley Lecture at 3 p.m., at the House of the Royal Society of Medicine. The subject of the lecture will be Some Sociological Considerations bearing upon the Occurrence, Prevention, and Treatment of Mental Disorders.

Royal Institution.—The annual meeting of the members of the Institution was held at Albemarle-street on Thursday, May 1st, Sir James Crichton-Browne, Treasurer and Vice-President, in the chair. The annual report of the committee of visitors for the year 1923, testifying to the continued prosperity and efficient management of the Institution, and the report of the Davy Faraday Research Laboratory Committee, were read. It was stated that 53 new members were elected during the year, and 63 lectures and 18 evening discourses were delivered. Sir James Crichton-Browne was re-elected as treasurer, and Sir Arthur Keith as secretary. The board of managers includes Dr. J. Mitchell Bruce, Mr. Ernest Clark, and Sir Charles Parsons.

Central Association for Mental Welfare.—A conference on Mental Deficiency will be held in the Central Hall, Westminster, London, S.W., on Wednesday and Thursday, May 28th and 29th. At the morning session on Wednesday (10.30 a.m.), Sir Leslie Scott, M.P., in the chair, an inaugural address will be given by Mr. J. Wheatley, Minister of Health, followed by papers on the Best Methods of dealing Administratively and Educationally with the Mentally Defective (Feeble-minded) Child, by Dr. H. B. Brackenbury and Mr. E. Salter Davies, and at the afternoon session (2.30 p.m.) by Dr. H. Herd. On Thursday, at 10.30 a.m., Dr. W. A. Potts will be in the chair, and a paper on the Influence of Heredity and Environment in Causing Mental Deficiency will be read by Dr. A. F. Tredgold. In the afternoon, at 2.30, a paper and address on Mental Tests—their Value to the Medical Officer, the Educationalist and the Social Worker, will be given by Dr. Cyril Burt and Dr. Robert Hughes, with the Rev. Principal Thomas in the chair. At each session there will be a discussion on the papers read.

The late Dr. H. A. Bull.—Harry Ashworth Bull, L.R.C.P. Lond., who died in a London nursing home on April 19th at the age of 52, after an operation, was a well-known practitioner of Great Haywood, Staffordshire. He was surgeon to the Rugeley District Hospital, and in 1901 was appointed public vaccinator for the Colwich District of the Staffordshire Union, and later took over the duties of medical officer for that area. He was also medical officer of the Sister Dora Convalescent Hospital at Milford. Keenly interested in any kind of public work which had a medical bearing, Dr. Bull was a prominent figure at meetings of tuberculosis and insurance committees, where his medical knowledge was always an asset in the debates. He was a member of the Staffordshire County Council, the Staffordshire, Wolverhampton, and Dudley Joint Tuberculosis Committee, the Staffordshire Insurance Committee, and the Staffordshire Mental Hospitals Board, and was a representative governor of the county grammar school. During the late war Dr. Bull was employed at the German prisoners' camp at Brocton, and the ill-health by which he had been handicapped for some time probably dated from this period of strenuous work. He leaves a widow, a son, and two daughters.

Medical Golfing Society.—In the final of this Society's "knock-out" tournament, Mr. Murray Thomson defeated Mr. T. P. Kolesar 2 and 1. The other semi-finalists were Dr. Cyril Ilott and Dr. T. B. Jobson.

League of Remembrance (1914–1919).—A meeting of the Medical Advisory Board of this League will be held at 1, Marlborough Gate, London, W., on May 13th, at 5 P.M., when Princess Beatrice will preside.

Dr. Hubert J. Norman will deliver an address on Insanity and Conduct at a meeting of the Ethological Society to be held at 90, Buckingham Palace-road, London, S.W., on Monday, May 12th, at 8.30 P.M.

West Kent Medico-Chirurgical Society.—A meeting will be held at the Miller General Hospital, Greenwich, on Friday, May 16th, at 8.45 P.M. Dr. E. G. Annis, the President, will occupy the chair, and will deliver an address entitled Old-fashioned Epidemics. A smoking concert will follow.

Chadwick Public Lectures.—To-day (Friday), May 9th, at 5.15 P.M., Prof. MacBride, F.R.S., will give a lecture on "Some Causes of a C 3 Population." The lecturer will describe the theory of mutations, and make suggestions as to causes of abnormalities which may be operative in producing C 3's. This lecture will be given in the Hall of the Royal Society of Arts, John-street, Adelphi. Dean Inge will take the chair. The history and present position of Women in Dangerous Trades will be set forth by Miss Constance Smith, H.M. Deputy Chief Inspector of Factories, on May 27th, at 8 P.M., in the Lecture Hall of Bedford College, Regent's Park, London, N.W. The last lecture of the programme will be given in the Chelsea Physic Garden, Swan Walk, Chelsea Embankment, on June 4th, at 5 P.M., by Sir David Prain, on Economic and Hygienic Relationships of Cinchona Bark and Quinine. Further information about Chadwick Lectures may be obtained of the Secretary, Mrs. Aubrey Richardson, at the offices of the Trust, 13, Great George-street, Westminster, London, S.W.1.

British Empire Cancer Campaign.—On Tuesday, May 6th, a meeting in support of the campaign was held at the Mansion House, London. The Lord Mayor, who was in the chair, announced that a special effort would be made in the City of London to provide a substantial addition to the funds of the campaign now available for cancer research. The Duke of York appealed for unremitting effort in combating the scourge which probably throughout the world accounts for more than half a million deaths annually. Sir John Bland-Sutton said that independent workers should be given facilities for work in established laboratories, and that the money which was given to help fight the cause of cancer would enable experts to be freed from the cares of practice and to devote their time to research. Prof. W. S. Lazarus-Barlow was of the opinion that the work would proceed along the lines of radium and X ray treatment, and he mentioned the curious power which existed in certain persons suffering from cancer to hold it in equilibrium for a number of years and on rare occasions to conquer it. Mr. J. Beaumont Pease said that £84,000 had already been subscribed, including an anonymous donation of £20,000 to meet expenses, so that the money subscribed by the public might be directly devoted to the campaign. Mr. J. P. Wheatley said that from inquiries made by the Ministry of Health in urban districts, they knew that not more than 50 per cent. of the people afflicted with cancer applied for treatment at all and that many others only applied when they were inoperable, and he urged the importance of preventive work. Lord Cave, Chairman of the Grand Council, said that they wanted to support all institutions which were studying the problem.—Among recent gifts to the British Red Cross Society for its campaign against cancer is the sum of over £279, the proceeds of the sale of the lathes and tools from the late Lord Hotham's private workshops. The British Red Cross Society has also received two anonymous gifts totalling £1500 and several donations of £100. Gifts to the campaign fund may be sent to the Hon. Sir Arthur Stanley, 19, Berkeley-street, W.1, cheques being made payable to the British Red Cross Society, and crossed "British Empire Cancer Campaign."

Queen Charlotte's Maternity Hospital.—On Monday, April 28th, Lord Howard de Walden presided at the annual meeting of this hospital, when it was announced that a Supplemental Charter of Incorporation had been granted by which the name of the hospital was changed from Queen Charlotte's Lying-in Hospital to Queen Charlotte's Maternity Hospital, and women became eligible for election on the committee of management. Lady Howard de Walden, Mrs. M. E. Christie-Miller, Mrs. Ernest Dent, and Mrs. Walter Seligman were among the first to be elected members of the committee. The annual report shows that while there is some improvement in the financial position much remains to be done before the hospital is free from debt. The number of patients admitted to the wards during 1923 was 1936 as compared with 1820 in 1922, while the patients visited in their own homes by the hospital midwives and medical officers numbered 2132 as compared with 2173 in 1922. The report refers to the gratifying fact that there were no maternal deaths among "district" out-patients during the year. In moving the adoption of the report, Lord Howard de Walden said that there had been an increased number of patients during the year, a large number of whom were emergency cases. He had hoped that the governors would have been able to enter on a rebuilding scheme, but they had found the difficulties greater than they had anticipated. To reduce the large overdraft at the bank the committee were reluctantly obliged to borrow £8000 secured on the hospital freehold, and it now amounted to £6540. They would have to do their best to raise the balance, and the committee wished to point out that the hospital was still in debt to the amount of £17,000. The report was adopted.

Manchester Hospitals and their "Outside" Patients.—An interesting question is being discussed in the Manchester local press as to whether too large a proportion of the beds in the voluntary hospitals are allocated to patients coming from outside the boundaries of the City of Manchester and the Borough of Salford. From the published statistics, the return for 1922—the latest available data, it appears that the total number of cases treated in Manchester and Salford hospitals was 262,208, and of these 40,629 cases came from outside areas—i.e., about 1 to 6·5—which proportion, it is stated, the hospital authorities do not regard as excessive, having regard to the fact that a very large number of the 40,000 are what are called specialist cases sent to the local hospitals for special treatment. There is, however, another aspect of the question—viz., the financial one. Do these "outside," and in some cases distant, districts from which these patients come contribute adequately for the treatment which such patients receive? The 1922 report shows that the expenditure for all the local hospitals was £341,288, while the corresponding ordinary income was £288,854, leaving a deficit for that year of £52,434. The cost to the local hospitals of the 40,000 "outside" cases was £95,735 and the corresponding contributions £44,461, leaving a deficit of £51,274, so that of total deficit of £52,434, £51,274 was due to patients sent from outside districts, while Manchester and Salford paid for their own patients except to the amount of £1159. Although through local efforts substantially increased contributions have been obtained from the outlying districts in Lancashire and Cheshire, in view of the above facts, if outside patients are to come to the local hospitals in such proportions, it is urged that something must be done to secure much more liberal contributions from these districts.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Tuesday, April 29th.

The Tuberculosis Order 1914.

Sir **Thomas Inskip** asked the Minister of Health whether he intended to revive the Tuberculosis Order of 1914 (Order, No. 883, dated June 23rd, 1914, which was suspended by Order, No. 1215, of 1914), in view of the urgent necessity of enabling local authorities to take adequate steps to combat the disease of tuberculosis.

Mr. **William Jowitt** asked the Minister of Agriculture whether, in view of the large payments contributed by the Exchequer to schemes in connexion with tuberculosis and in view of the fact that infection was largely due to bovine tuberculosis, he would consider the advisability of bringing into force the Tuberculosis Order, 1914.

Mr. **Buxton** replied: I am giving careful consideration to the question of reintroducing the Tuberculosis Order of 1914, but I am not yet in a position to make a statement on the subject.

R.A.M.C. Officers' Leave at Woolwich.

Mr. **Penny** asked the Secretary of State for War whether he was aware that leave to the medical officers of the Royal Army Medical Corps in the Woolwich district had been stopped owing to shortness of staff, and that much discontent had been caused thereby; and what steps were being taken to rectify and overcome the great lack of candidates for this important arm of the service, the present conditions of which were not considered sufficiently attractive.—Mr. **Walsh** replied: No leave of officers of the Royal Army Medical Corps at Woolwich has been stopped, but three officers have had their leave postponed for a short period owing to sickness or other causes. As regards the last part of the question, I can assure the hon. Member that the matter is receiving careful consideration, although I am unable to make any statement at present.

WEDNESDAY, APRIL 30TH.

Flogging in the Navy.

Mr. **THOMAS JOHNSTON** asked the Civil Lord of the Admiralty if flogging had been re-established in the Navy for certain offences: if he was aware that flogging was dismissed as no satisfactory deterrent in the Report on Juvenile Delinquency, 1920; and if he would consult with some persons eminent in psychology, physiology, and in the dealing with youthful offenders, such as a London stipendiary magistrate, before he longer permitted a continuance of this practice.—Mr. **AMMON** replied: Boys convicted by court martial of certain serious offences are punished by birching. After careful inquiry I am satisfied that it would not be an advantage to abolish the punishment.

Mr. **JOHNSTON** asked whether the careful inquiry had included a report on the subject by Dr. James Glover, an eminent authority on psychology, and, if not, would the hon. gentleman consider that report if he sent him a copy.

Mr. **AMMON**: I have already stated that on my own initiative when I went to the Admiralty I went into this matter with the intention of seeing if flogging could be abolished. After going fully into the case and taking evidence I came to the conclusion that on the whole such abolition would be disadvantageous.

Viscount **CURZON**: Is it not the fact that the birch for the flogging of boys in the Navy has never been used except for serious sexual offences and that there is no feeling whatever on the part of the lower deck about it.

Mr. **AMMON**: I have already stated that it is only for very serious sexual offences, and there have only been six cases since 1917.

THURSDAY, MAY 1ST.

Royal Commission on National Insurance Terms of Reference.

Sir **KINGSLEY WOOD** asked the Prime Minister the terms of reference of the Royal Commission to inquire into national insurance, and the names of the members of the commission.—Mr. **WHEATLEY** replied: The following terms of reference have been agreed with representatives of the medical profession and the committee appointed for the purpose by the Approved Societies Consultative Council:—"To inquire into the scheme of National Health Insurance established by the National Health Insurance Acts, 1911–1922, and to report what, if any, alterations, extensions or developments should be made in regard to the scope of that scheme and the administrative, financial and medical arrangements set up under it." I am not yet in a position to announce the names of the members of the Commission.

The Germ of Foot-and-Mouth Disease.

Mr. **MACFADYEN** asked the Minister of Agriculture whether he had any information as to the alleged discovery by two German investigators, Dr. Dahmer and Prof. Frosch, of the germ of foot-and-mouth disease.—Mr. **BUXTON** replied: Such information has been received, and it is understood that full details as to these investigations will be published in the near future.

Recreation for Elementary School-children.

Mr. **EDMUND HARVEY** asked the President of the Board of Education whether he was able to take any fresh steps to encourage local education authorities in urban areas to make fuller provision for organised recreation for the children in elementary schools by acquiring new playing fields and by the better use of existing opportunities, and, in particular, for the utilisation of municipal tramways to convey scholars to parks, playing fields, and swimming baths at hours when the tramcars are not fully used by the travelling public.—Mr. C. **TREVELYAN** replied: Local education authorities are, I think, aware that the Board are quite prepared to encourage the activities mentioned by my hon. friend. I am always prepared to consider suggestions for their more extensive development.

Part-time Medical Officers of Prisons.

Lieut.-Col. **FREMANTLE** asked the Secretary of State for the Home Department (1) which were the prisons staffed by part-time medical officers: what were the present salaries of these officers; and on what basis were they arrived at. (2) In what respect had the closing of prisons increased the work and responsibility of the part-time medical officers at the remaining prisons; and whether it was proposed to increase their remuneration accordingly.—Mr. **HENDERSON** replied: The prisons and salaries are as follows:—Manchester, £300; Hull, £250; Winchester, Newcastle, Bristol, Cardiff, Lincoln, Preston, Durham, Borstal, Aylesbury, and Portland, £200 each; Leicester, Swansea, Shrewsbury, Portsmouth, Gloucester, Nottingham, Norwich, Exeter, Bedford, Wakefield, Oxford, and Dorchester, £150 each; Ipswich, Shepton Mallet, and Plymouth, £100 each. In fixing the salary the population of the prison is the basis, unless there are some special features justifying special consideration. The closing of eight prisons in March, 1922, has caused some increase in the population of some of the remaining prisons, and in one instance the salary of the part-time medical officer was increased. In the remainder the additional population has not so far been sufficient to justify an increase, but except where there has been an increase of this or other special grounds a temporary bonus is drawn.

Workmen's Compensation Medical Referees.

Mr. **THOMAS WILLIAMS** asked the Secretary of State for the Home Department if he was aware that the registrar of a county court in Yorkshire was appointing as medical referees under Section 11 of the Workmen's Compensation Act, 1923, doctors who were permanently employed as compensation doctors for certain coal-owners and the Yorkshire Coal-owners' Mutual Indemnity Company, Limited, to adjudicate in cases of dispute between other Yorkshire coal-owners whose workmen were insured by the Yorkshire Coal-owners' Mutual Indemnity Company, Limited, and workmen; and, as this had been brought to the notice of the registrar without result, would he inquire into the same and give instructions that medical referees appointed under Section 11 should in no case be doctors who were employed permanently by either coal-owners, coal-owners' mutual indemnity companies, or trade-unions affected.—Mr. **HENDERSON** replied: I am not aware of any such case. In the only instance brought to my notice it appeared on inquiry that the allegation was not borne out. It is a condition of the appointment of a medical referee that he shall hold no permanent employment of the kind referred to in the question.

MONDAY, MAY 5TH.

Plague in the Punjab.

Mr. **WARDLAW-MILNE** asked the Under Secretary of State for India if he would give the House any further information regarding the outbreak of plague in the Punjab.—Mr. **RICHARDS** replied: The Government of India have reported that 11 districts out of the 29 in the Punjab are infected, and that the mortality from Jan. 1st to the end of March is estimated at 38,000, including 25,000 deaths in March. Figures for the first two weeks of April have not yet been received, but in the week ending April 19th there were 12,393 deaths. The epidemic is less severe than in 1902, 1904, 1905, 1907, and 1915, but has assumed alarming proportions. The measures taken are chiefly directed towards inoculation and disinfection. Funds have been provided for additional staff in each infected district and for the adequate supply of plague vaccine. A vigorous inoculation campaign has been undertaken and resulted in 30,000 inoculations weekly for a considerable period. The total number of inoculations to April 19th was over 236,000, which is a greater number than in any previous year since 1903. Conditions will favour a decline of the epidemic in the present month. A decline had set in in the Southern Punjab by the middle of April.

Reports on Small-pox Outbreaks.

Mr. **GEORGE OLIVER** asked the Minister of Health whether in cases where notification of an outbreak of small-pox had occurred any special report as to the sanitary conditions of the property or neighbourhood was made to his department.—Mr. **WHEATLEY** replied: No such special reports are made to my department as a matter of routine, but when an outbreak of small-pox is investigated by one of my medical officers he reports as to all the circumstances affecting the outbreak.

TUESDAY, MAY 6TH.

Detention at a Mental Hospital.

Lord **HENRY CAVENDISH-BENTINCK** asked the Secretary of State for War whether he could explain why Lieut. C. H. Clendining, 3rd Battalion Royal Irish Rifles, who was detained as an alleged mental case at the station hospital, Cawnpore, during September 1917, was permitted to retain in his possession a sporting gun, revolver, and ammunition, and to leave the hospital to go out shooting in the jungle; and if he was aware that this officer was placed in hospital without being examined by any medical officer.—Mr. **WALSH** replied: With regard to the first part of the question I have at present no information before me. With regard to the latter part, I understand from Lieut. Clendining's own account that he was ordered to hospital by the senior medical officer after examination. As I informed the hon. Member for Dartford on March 4th last, the Army Council are awaiting the report of the Government of India before investigating the case in accordance with the procedure laid down in Section 42 of the Army Act for dealing with the complaint of any officer who considers himself wronged. I understand that the report in question has just been received by the India Office and is being communicated to the War Office.

River Pollution in Fife.

Mr. DUNCAN MILLAR asked the Secretary for Scotland whether his attention had been drawn to the serious pollution of the river Leven in Fife: and whether, in view of the danger to public health thereby created, he was prepared to take steps to secure the proper treatment of the effluents from factories and works discharging into the river, so as to permit of its purification.—Mr. ADAMSON replied: My attention has been called to the pollution of the river Leven. The initiative in such cases rests with the local authorities, who are empowered with the consent of the Scottish Board of Health to take proceedings against offenders. In the event of a refusal on the part of a local authority to prosecute, any person interested may apply to the Board, who are thereupon required to hold an inquiry and may thereafter direct the local authority to institute proceedings.

Royal Commission on National Insurance.

Sir KINGSLEY WOOD asked the Prime Minister whether the character of the Royal Commission to inquire into national insurance had now been determined; and when the same would be constituted.—Mr. GREENWOOD replied: My right hon. friend regrets that he is not yet in a position to make a statement on the subject referred to by the hon. Member, but will do so as soon as possible.

Pension Final Awards.

Mr. EGAN asked the Minister of Pensions what steps he had taken to meet the serious complaint that, in cases where the final award was set aside on appeal to the pensions (assessment) appeal tribunal, the Ministry took no further action in the case.—Mr. J. W. MUIR replied: My right hon. friend has caused instructions to be issued to the effect that in all cases of this nature the officer or man concerned shall be re-examined, as soon as possible after the decision of the Tribunal, by a medical board with a view to the award of any further compensation which his condition may justify.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, May 13th.

PSYCHIATRY: at 8.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.
Discussion:
On Proposed Changes in the Law Regarding Criminal Responsibility of the Insane, to be opened by Mr. Donald Carswell.

Wednesday, May 14th.

SURGERY: SUBSECTION OF PROCTOLOGY: at 6 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.

Thursday, May 15th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)
Annual General Meeting:
Election of Officers and Council for 1924–25.
Cases:
Dr. Knowsley Sibley: Case of Disseminated Lupus Erythematosus.
Dr. G. Pernet: Porokeratosis.
Dr. H. Semon: Case of Livedo Annularis (a rare type, with sections).
Other cases will be shown.
Paper:
Dr. Civatte (Paris): Psoriasis (illustrated by microscopic sections).

Friday, May 16th.

ELECTRO-THERAPEUTICS: at 7.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, W.

TUESDAY, May 13th.—5.15 P.M., Prof. Joseph Barcroft: The Effect of Altitude on Man. (Lecture III.)

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Chandos-street, W. 1.

THURSDAY, May 15th.—8.15 P.M., Prof. Warrington Yorke and Dr. J. W. Scott Macfie: Observations on Malaria made during the Malaria Treatment of General Paralysis. (Preceded, at 7.45 P.M., by a demonstration.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 12th, to SATURDAY, May 17th.—CENTRAL LONDON OPHTHALMIC HOSPITAL. Mon., 2 P.M., Mr. Oliver: Plastic Operations on the Eyelids. Tues., 2.30 P.M., Mr. Gibb: Iritis. 4.30 P.M., Mr. Williamson-Noble: Inflammation of the Eye. Pathology. Thurs., 2.30 P.M., Mr. Cunningham: Interstitial Keratitis. Fri., 4.30 P.M., Mr. Neame: Squint.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL. Special intensive course.—INFANTS HOSPITAL. Mon., May 12th, to Sat., May 24th. Special Course in Infants' Diseases (for Medical Officers of Welfare Centres and others). 2 P.M. to 5 P.M. daily.—LONDON LOCK HOSPITAL. Clinical work daily. Lectures at Dean-street: Mon., 5 P.M., Mr. Gibbs: Treatment of Syphilis. Tues., 2.30 P.M., Mr. McDonagh: The Theory and Practice of the Treatment of Syphilis. Wed., 5 P.M., Mr. Lindsay Rea: Ophthalmia Neonatorum, its Recognition and Treatment. Thurs., 2.30 P.M., Mr. W. Victor Corbett: Practical Demonstration of Tests Used in Syphilis and Gonorrhœa. Fri., 4 P.M., Mr. Johnston Abraham: Late Sequelæ of Gonorrhœa in the Female.—ST. MARK'S HOSPITAL FOR DISEASES OF THE RECTUM. Operations, clinical demonstrations, and lectures will be in progress during the day.—MAUDSLEY HOSPITAL. Mon., 3.30 and 5.30 P.M., Dr. Bernard Hart: The Psychoneuroses. Tues., 2.30 P.M., Dr. F. C. Shrubsall: The Practical Aspect of Mental Deficiency. 4.30 P.M., Sir Frederick Mott: The Pathology of Mental Diseases. Wed., 2.30 P.M., Dr. E. Mapother: Demonstration in Clinical Psychiatry.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, May 12th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Dr. Simson: Diseases of Women.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Pernet: Skin Dept.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Dept. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE. (Prince of Wales's General Hospital, Tottenham.)

(At 4.30 P.M.)

MONDAY, May 12th.—Mr. Aubrey Goodwin: Uterine Hæmorrhage.

TUESDAY.—Dr. J. Metcalfe: The Opaque Meal and its Interpretation.

WEDNESDAY.—Dr. J. Browning Alexander: Dyspepsia.

THURSDAY.—Mr. W. E. Tanner: Tuberculosis of the Mesenteric Glands in Children.

FRIDAY.—Mr. W. Ibbotson: The Essentials in Hearing and Equilibration Tests.

KING'S COLLEGE, Strand, W.C.

THURSDAY, May 15th.—5.30 P.M., Prof. T. H. Brice, F.R.S.: The Development of the Human Embryo (University of London Advanced Lectures in Anatomy).

FRIDAY.—5.30 P.M., Second Lecture.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C.

POST-GRADUATE COURSE.

MONDAY, May 12th.—12 noon, Dr. Greenfield: The Cerebro-spinal Fluid. 2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson. Lecture: Temporo-sphenoidal Epilepsy.

TUESDAY, May 13th.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Adie. Lecture: Muscular Atrophies.

THURSDAY, May 15th.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe. Lecture: Clinical Disorders of Muscle Tone.

FRIDAY, May 16th.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Mr. Sargent. Lecture: Tumours of Ponto-cerebellar Angle.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

THURSDAY, May 15th.—5 P.M., Mr. Richard Lake: Hearing Tests. (Geoffrey E. Duveen Lectures in Otology.)

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, May 15th.—4 P.M., Dr. Poynton: Acetonæmia associated with Volvulus of the Small Intestine.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.
TUESDAY, May 13th.—5 P.M., Dr. Adamson: Affections of the Nails.
THURSDAY.—5 P.M., Dr. Griffith: Pemphigus and Bullous Eruptions.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)
MONDAY, May 12th.—(At the Children's Hospital.)
TUESDAY.—(At the Southern Hospital.) Mr. Nuttall: Ulcerative Colitis.
WEDNESDAY.—(At the Northern Hospital.) Mr. Monsarrat: Hæmaturia.
THURSDAY.—(At the Stanley Hospital.) Dr. A. G. Gullan: Encephalitis Lethargica.
FRIDAY.—(At the Royal Infirmary.) Mr. Kennon: Surgical Cases.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.
TUESDAY, May 13th.—4.15 P.M., Dr. J. Wharton: Ophthalmic Cases.

BRISTOL UNIVERSITY POST-GRADUATE DEMONSTRATIONS.
WEDNESDAY, May 14th.—3.30 P.M. (at the Hereford General Hospital), Mr. L. E. Claremont: Care and Treatment of Children's Mouths.

Appointments.

EAST, W. NORWOOD, M.D. Lond., M.R.C.S., L.R.C.P., has been appointed Medical Inspector, H.M. Prisons, England and Wales.

FAILL, C. J. C., F.R.C.P. Edin., L.R.C.S. Edin., L.R.F.P.S. Glasg., Chief Clinical Tuberculosis Officer, Leeds.

NIXON, H. C., M.D. Edin., Physician, Royal Mineral Water Hospital, Bath.

REA, S. P., M.B., B.S. R.U.I., Medical Officer for the Bangor Dispensary District.

WALKER, N., M.B., Ch.B. Manch., Assistant Medical Officer to the Out-patient Department, Royal Manchester Children's Hospital.

Certifying Surgeons under the Factory and Workshop Acts: ROSS, T. S. (Milborne Port District of Somerset); WILSON, J. T., M.B., Ch.B. Edin. (Dronfield); MANWARING-WHITE, R. M., M.D., Ch.B. Edin., F.R.C.S. Edin. (Northwich); and DONALD, H. C., M.B., Ch.M. Glasg. (Bishopton).

Manchester Royal Infirmary: ELLISON, B. L., M.B., Ch.B. Manch., Resident Medical Officer (Central Branch); HOGBEN, F. A., M.R.C.S., L.R.C.P. Lond., Assistant Medical Officer (Central Branch); COOK, B., M.B., Ch.B. Manch., Clinical Assistant; APPLETON, J. H., M.B., Ch.B. Manch., Senior House Surgeon.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Asst. Med. Electrician.

Aden Settlement.—Executive Health Officer. Rs.800 per mensem.

Belfast, Queen's University.—Lectureship in Anatomy.

Bradford Children's Hospital.—H.S. £1000.

Brentwood, Essex High Wood Hospital for Children.—Jun. Asst. M.O. £560.

Brighton, Hove Hospital, Sackville-road, Hove.—R.M.O. £150.

Cardiff, University College of South Wales, &c.—Prof. of Path. and Bact. £1500.

East Sussex County Mental Hospital, Hellingly.—Jun. Asst. M.O. £350.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., Obstetric Asst., and Two H.S.'s. Each £50. P. for Mechano-Therapeutic Dept.

Gt. Yarmouth Hospital.—H.S. £150.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Radiologist £100.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Med. O. for X Ray and Electro-Therapeutics.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Asst. Radiologist. £50.

King Edward VII. Sanatorium, Midhurst, Sussex.—Med. Sup. £1000.

Leicester Royal Infirmary.—Hon. P. and Asst. Hon. P.

Liverpool Hospital for Consumption and Dis. of Chest, Mount Pleasant.—Asst. M.O. and Pathologist. £150.

Liverpool, Royal Southern Hospital.—Hon. Gynæcologist and Hon. Asst. Orthop. S.

Liverpool, Walton Institution.—Res. Asst. M.O. £200.

London County Council Education Officers' Dept.—Woman Organiser of Physical Education. £696.

Loughborough and District General Hospital and Dispensary, 9, Leicester-road.—Res. H.S. £175.

Manchester, Ancoats Hospital.—H.S. £100.

Manchester Royal Eye Hospital.—H.S. Senior £150. Junior £120.

Margate, Princess Mary's Hospital for Children, Cliftonville.—Second A.M.O. £560.

Middlesex Hospital Medical School, W.—Two Cancer Research Scholarships. Each £150.

Middleton-in-Wharfedale, Sanatorium.—Asst. M.O. £500.

Miller General Hospital for South-East London, Greenwich-road, S.E.—H.S. £125.

Mines Dept., Dean Stanley-street, Millbank, S.W.—Temp. Medical Inspector. £1000.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Registrar. £200.

Newcastle-upon-Tyne, University of Durham College of Medicine.—Vacancy in Dept. of Bacteriology. £600.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Cas. H.S. £100.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. P.

Royal College of Surgeons of England.—Hunterian Professor and Arris and Gale Lecturer.

St. Giles Hospital, Camberwell, S.E.—Radiologist. £110.

Sheffield, Jessop Hospital for Women.—Hon. Physiologist. Hon. Asst. S. Also Asst. H.S. for Gynæcological and Maternity Depts. £100.

Sheffield Royal Hospital.—Cas. O. £150. Supt. and Secy.

Sheffield Royal Infirmary.—H.P. £60.

Union of South Africa Government Mental Hospital Service.—A.P.'s. £460.

Warrington County Borough.—Asst. M.O.H. £450.

West End Hospital for Nervous Diseases, Welbeck-street, W.—Half-time Pathologist. Also Locum Tenens for same post. Each £300. Also Radiologist.

West London Hospital, Hammersmith-road, W.—Med. Reg. £100.

Western Dispensary, 38, Rochester-row, Westminster, S.W.—Vacancy on Attending Medical Staff.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointment: Pickering, Yorks (North Riding).

Births, Marriages, and Deaths.

BIRTHS.

ATKIN.—On April 27th, at Fulwood-road, Sheffield, the wife of C. S. Atkin, M.B., of a son.

MARRIAGES.

COLBORNE—CUTBUSH.—On April 30th, at the Parish Church, Headcorn, Surgeon Lieutenant-Commander William John Colborne, R.N., to Florence Alice, youngest daughter of Mr. and Mrs. W. Cutbush, of Headcorn, Kent.

FAWDRY—MEARNS FRASER.—On April 29th, at Portsmouth Parish Church, John Wood Fawdry, *M.C.* (Captain, Royal Warwickshire Regiment), second son of the late A. G. Fawdry, Esq., and Mrs. Fawdry, Edgbaston, to Lois Mearns, younger daughter of Dr. and Mrs. A. Mearns Fraser, Southsea.

HICKS—ELLIS.—On April 22nd, at St. Mary Magdalene Church, Norwich, Ernest Wm. Hicks, M.R.C.S., L.R.C.P., to Cecilia Mary Susan, daughter of Rev. A. H. and Mrs. Ellis.

JOLL—WINSLOE.—On April 30th, at St. Mark's, North Audley-street, by the Rev. W. E. Pennyman, M.A., Cecil Augustus Joll, M.S. Lond., F.R.C.S. Eng., to Laura Merriall Winsloe.

SWAINE—PEGRUME.—On April 26th, at All Souls', Langham-place, Dr. Richard O. Swaine, of Christchurch, Hants, to Nancy Hillyard, youngest daughter of the late J. Pegrume and Mrs. Pegrume.

DEATHS.

GRAHAM.—On April 29th, at "Shoreside," Bolton-le-Sands, Dr. Charles Robert Graham, aged 67.

SPENCER.—On April 24th, at Tavistock, Devon, Dr. Edward Macready Spencer, of Cardiff, aged 58 years.

WYLIE.—On May 2nd, at Leicester, Angus Wyllie, M.A., M.B. Camb., of The Ropewalk, Nottingham.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

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Notes, Comments, and Abstracts.

DIED IN HARNESS.

A STUDY OF THE SURGEONS' ROLL.

By Victor G. Plarr,

LIBRARIAN AND COMPILER OF THE ROLL OF FELLOWS, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

The recent death at a comparatively early age of Sir Archibald Reid adds another name to the roll of martyrs to science. He had devoted himself to roentgenology and ultimately was the victim of the methods he had improved. But though science thus counts a number of martyrs in its ranks, duty, or mere professional routine, counts many more. On examining the lives of some 2000 or more medical men, Fellows of the Royal College of Surgeons, many of them general practitioners, we can count during a period of 80 years nearly as many men who may be said to have qualified as martyrs to the day's work. As long ago as 1847 John Phillips Potter, F.R.C.S., when assistant to the famous Liston, punctured a knuckle when taking a diseased hip-joint from a subject for dissection, and after acute suffering, heroically borne, died within three weeks of his accident and only five weeks of his appointment to the assistant surgeoncy of University College Hospital. He was a man of general culture and rare promise. Deaths due to operation wounds—punctures and cuts—or to infections have continued to occur even after the introduction of rubber gloves. Thus, taking the names in alphabetical order, we find that Dr. Andrew Clark died in 1913 of a bad cut received during one of his operations seven years earlier; Campbell Dykes died a victim to septicæmia, contracted while operating in October, 1911; Dr. Webb Jones accidentally inoculated himself when giving an intravenous injection to a colleague dying of typhus during the epidemic of that disease in Alexandria early in 1917. Operation infection also caused the death of Mr. Charles Killick, M.A. Camb., F.R.C.S., Dr. Henry Percy Potter, of Kensington, in 1917—a most pathetic case—and Dr. Arthur John Sharp, of Nottingham, in 1910. In some of these cases the hands may not have been properly gloved. None the less, these gentlemen were martyrs to duty, and to their goodly company might be added a list capable of indefinite extension of those who overworked themselves during many years, insisted on visiting patients when themselves very ill, or, in the recent war period, did the work of colleagues at the Front when themselves past work. Here it would be invidious to name names.

A curious list might be made of those who succumbed to their specialties, the diseases in which they were interested. Thus, in 1906, Kendall, of Bristol, died of an appendicitis operation after operating on a child whose appendix he removed. In 1889 Dr. David Reid McKinnon died combating a yellow fever epidemic, in which he had taken great interest, in British Honduras. John Henry Farbstein, resident medical officer of the Hull Workhouse, died of phthisis in 1911, having spent much time in the study of the disease in the consumption ward, and in 1888 Francis Stanhope Hawkins, an old Tonbridge School and Oxford man, died of diphtheria after clearing the tube in the throat of a child, presumably by the primitive method of suction. The case of that veteran friend of English surgery, Just Lucas-Championnière, may here be included. He died in 1913 of cerebral hæmorrhage while reading a paper at the Institut on ancient trephining and cerebral localisation. Sometimes a medical man is destroyed of malice prepense by an insane patient. Thus, to cite one instance of several, Samuel Pozzi, the great French gynæcologist, was shot dead in June, 1918, by a discontented melancholic patient on whom he had rightly refused to operate again. Another well-known case of a physician assasinated by a lunatic occurred in Australia not many years ago. With the foregoing instances we might rank those of the medical missionaries who fell victims to the diseases they were endeavouring to stamp out among their semi-civilised and unhealthy flocks. Among these the Chinese missionaries rank high. Dr. James Glenny Gibb, organiser of the Central Red Cross Society's work in the Chinese Revolution of the year 1912, died in the midst of his labours; Cecil Frederick Robertson, M.B., F.R.C.S., died of illness contracted among his out-patients in 1913; and, at about the same time, Dr. Herbert Stanley Jenkins, overwhelmed with work in the Sianfu (Shansi) Hospital, succumbed to fever. He was in his thirty-ninth year, and so great was the stress of duty unavoidably imposed upon him in the new mission hospital that he saw as many as 60 out-patients the day before he died. Out-of-the-way cases of death at the post of duty, not referable to any of the above categories, occur in the older medical biographies. Charles Aston Key, famous as an operator and pioneer anæsthetist, died greatly interested in his own case. His death from cholera, from which he only suffered for a few hours, occurred in 1849, during a historic epidemic in the City, and is minutely described, step by step, by his medical attendant, neither he nor Key having the slightest suspicion of the water-borne nature of the disease. It is a memorable document. In 1863 Charles Allen Chavasse, F.R.C.S., died in the very act of attending a patient in his surgery; Henry Work Dodd, F.R.C.S., met a similar fate in his consulting room in 1921; but perhaps the most remarkable tragedy occurred when an old surgeon of the past died at the very moment of delivering a mother of her child.

POISON GAS IN NAVAL WARFARE.

Poison gas is not usually associated with naval warfare, but that it has been so used is stated by Lieut. Paul W. Hains, of the Construction Corps, U.S.N., in a recent number of the *Naval Bulletin* of the U.S. Naval Medical Department. In a paper dealing with the protection of capital ships against poison gas, he instances the case of H.M.S. *Botha*, a flotilla leader, which in 1917 passed through a smoke screen into which the Germans had mixed poison gas. The ship was exposed for only about a minute, but "every man on her was thrown into paroxysms of nausea and suffered a most violent headache." The author wonders what would have happened if the Turks had discharged poison gas over and about the fleet lying off the Dardanelles. To prevent a ship being thus put out of action, protection of some kind must be given to the personnel, and the writer requires that every man shall have a mask, the effective filter being arranged on top of his head so as not to hamper his arm work, but an "optical" mask must be attached to sighting instruments, so that the gun-layer, for example, shall use his mask habitually at his work, and become thoroughly accustomed to it. Each man must also have a suit of protective clothing, suitably impregnated, to neutralise vesicants like mustard gas. The wearing of such equipment materially reduces efficiency and output of work, as the writer tells us he found when, wearing a gas mask, he tried to play baseball; he had even difficulty then in merely writing. As the sailor in action is called upon for the very hardest work of his life, some other method of protection must be sought; protection must be given to the air of the ship, not to the individual. Lieut. Hains thinks the best method will be to maintain a positive air pressure continuously within the ship by over-ventilation. Then offensive air from the outside cannot drift in; a good scheme, but we are not told whence is to come the uncontaminated air needed to keep up the pressure. However, the turrets are to be freed from hurtful gases by the "Seco" spray, which washes air, eliminating 95 per cent. of poisonous gases, and the conning tower and a reconstructed engine-room are to have a system of continuous purification by soda-lime, as used in submarines, removing carbonic acid and moisture, and oxygen is to be gradually added from cylinders. All these proposals mean increased weight to be carried by the ship, and so make her a little less effective; but the gas menace is urgent.

THE ROCKEFELLER FOUNDATION.

A review of the activities of the Rockefeller Foundation in 1923, written by George E. Vincent, its President, will shortly appear. Meanwhile, the Information Service of the Rockefeller Foundation has provided in a single breathless sentence a summary of the activities of the Foundation during the past year, which are amazing in their scope and generosity.

During the year 1923 the International Health Board, the China Medical Board, and the Division of Medical Education of the Rockefeller Foundation supplied Fellowship funds for 636 individuals in 29 different countries; supported through the League of Nations interchange institutes for 54 public health officers from 27 nations; arranged international visits of one commission and of 24 visiting professors; furnished emergency relief in the form of medical literature or laboratory equipment and supplies to institutions in 15 European countries; sent scientific material to Japan after the earthquake and invited a group of Japanese medical scientists to use the laboratories of the Peking Union Medical College as guests of the institution; continued to contribute to schools or institutes of hygiene at Harvard, London, Prague, Warsaw, and São Paulo, Brazil; coöperated in nurse training at Yale University and in France, Belgium, Brazil, China, and the Philippines; accepted an invitation from Brazil to participate in a comprehensive attack upon yellow fever; had a share in demonstrations of malaria control in 12 American States, and conducted malaria surveys or studies in the United States, Brazil, Australia, Nicaragua, Porto Rico, Salvador, the Philippine Islands, and Palestine; either continued or began anti-hookworm work in conjunction with 20 Governments in various parts of the world; contributed to 183 county health organisations in the United States, New Brunswick (Canada), and Brazil; continued a study of the medical schools of the world by visits to Belgium, Austria, Czecho-Slovakia, Germany, Hungary, Poland, Turkey, Hong-Kong, the Straits Settlements, Siam, Canada, England, Scotland, Wales, the Netherlands, Mexico, and Colombia; offered to contribute £280,750 sterling to the development of medical education in certain universities in the British Isles; gave $500,000 to the University of Alberta, and pledged $250,000 to the University of Pennsylvania toward buildings for anatomy and physiological chemistry; continued to support a modern medical school and teaching hospital in Peking; aided two other medical schools and 25 hospitals in China; assisted pre-medical education in several institutions in China and agreed to do this also in Bangkok, Siam; lent representatives to Governments and institutions for various types of counsel and service; continued to support a disease reporting service of the Health Section of the League of Nations; contributed to mental hygiene projects, demonstrations in dispensary administration, organisation of dispensary work in France, and to other undertakings in the fields of public health and medical education.

Expenditure in 1923.

The following table presents a summary of the expenditure in various fields during 1923:—

Public Health.	
International Health Board—hookworm disease, malaria, yellow fever, county health work, laboratory service, Fellowships, &c.	$2,332,511
Mental hygiene	52,153
Hospital, dispensary, and nursing studies	161,504
School of Public Health, Harvard University ..	618,750
National Health Council	9,350
Medical Education.	
China Medical Board	1,354,942
Canadian Medical Programme	1,596,592
London Medical Centre	621,472
University of Chicago	1,046,952
Columbia University	8,333
Central Europe—journals and apparatus	60,316
Pasteur Institute	20,000
Fellowships, studies, &c.	202,403
Miscellaneous.	
Concluding payments on ten-year pledges to educational enterprises	37,500
Concilium Bibliographicum, Zürich	20,000
Fellowships in physics, chemistry, and the biological sciences	97,428
National Information Bureau	1,000
Administration.	
Executive offices	189,869
Total	$8,431,075

The record requires little comment. Those who have experience of the care taken by this giant organisation to investigate the claims made upon its benevolence know that the percentage of wasted money or effort is reduced to a minimum, while no reasonable scheme for developing research or education or promoting health in any part of the world is refused consideration.

COLONIAL HEALTH REPORTS.

Bahamas.

THE estimated population on Jan. 1st, 1923, was 56,924. The birth-rate in 1922 was 31 per 1000 and the death-rate 25·2 per 1000. The Bahamas General Hospital (originally established in 1809 as a poor-house) comprises the hospital proper, a paying patients' ward, infirmary, dispensary, lunatic asylum, and leper wards. The number of inmates on Dec. 31st was: Alexandra Hospital, 76; Victoria Jubilee Infirmary, 37; lunatic asylum, 46; leper asylum, 8. During the year there had been 955 admissions, making a total under treatment of 1105. There were 148 surgical operations performed under a general anæsthetic in the Alexandra Hospital; 4252 cases were prescribed for or treated for minor surgical ailments at the out-patients' (or dispensary) department. At the public dispensary 17,324 prescriptions were dispensed.

St. Vincent.

The population of this colony was estimated by the Registrar-General on Dec. 31st, 1922, to be 46,220. In 1922 the birth-rate was 36·37 and the death-rate 21·31 per 1000. Of the total number of births 71·1 per cent. were illegitimate. The general health was good. There was a mild epidemic of measles, and infantile diarrhœa continued to be prevalent. The campaign against yaws by intramuscular injection of novarsenobillon was pressed vigorously with very satisfactory results. During the year 4604 cases—over 10 per cent. of the population—were treated and of these over 78 per cent. were returned as cured. The temperature throughout the year varied from 76·20° to 80·8° F. The total rainfall for the year was 79·74 inches.

PROPOSED VISIT OF SPANISH MEDICAL MEN TO THE BRITISH EMPIRE EXHIBITION.

To the Editor of THE LANCET.

SIR,—On the occasion of the celebration of the great British Empire Exhibition it is our desire to organise a mission of Spanish University professors and medical and scientific men with a view to making a visit to this exhibition. At the same time we should like to avail ourselves of the opportunity to hold conferences, discuss scientific affairs, and visit the institutions, hospitals, and so forth in the United Kingdom, and thus help to tighten the bonds already uniting the men of science of Great Britain with their brothers of the Iberian Peninsula. In order, however, to organise such an expedition in a fitting manner it is essential that we should have the support and assistance of our British colleagues.

I am, Sir, yours faithfully,

DOCTOR CARLES,
Editor, Laboratorio, Revista de Ciencias Biológicas y de Medicina Experimental, Pelayo 24, Barcelona.

April 30th, 1924.

THE NURSE'S INTEREST IN HER WORK.

To the Editor of THE LANCET.

SIR,—At least one institution for hospital nurses for private cases advertises the fact that its nurses return at intervals to the wards of the hospital between their private cases, and I should like, if I may, to call attention to the extreme importance of this, not only for keeping the nurses' training fresh and up to date, but also for the general good of everyone concerned. Efficient nurses who are keen at their work must inevitably find many private cases, with their usually prolonged periods of convalescence, dull and uninteresting, and it is well known that private nurses often long for the variety and constant urgency which is only obtainable in a hospital ward, and usually the better the nurse the more frequently this feeling occurs. If it were the universal custom for private nurses to return for fixed periods to the wards of a hospital they would not only keep their knowledge fresh, but the comparative monotony of many private cases would be a relief and not merely a period of dull inactivity. Such matters of applied psychology are far more important than they appear.

I am, Sir, yours faithfully,

May 4th, 1924. CYRIL BRUYN ANDREWS.

SEAMLESS BIAS BANDAGES.

THESE bandages are made of a muslin-like fabric, soft in texture, and cut "on the cross." The elasticity of the fabric allows it to conform to the contour of the limbs or body and there is little or no chance of the bandage slipping out of place, while, in tension, the threads of which it is composed are drawn closer together. Where a thin and porous bandage with firm pressure is required this invention should prove useful. The makers are the Seamless Bias Manufacturing Company, of Newark, N.J., and the European agent Mr. A. H. E. Bercham, M.I.M.E., 3, Casewick-road, West Norwood, London, S.E. 27.

MALARIA SIMULATING THE "ACUTE ABDOMEN."

THAT chameleon, malaria, furnishes many difficulties of diagnosis to practitioners in hot countries. It may, e.g., simulate cholera or dysentery (THE LANCET, 1920, ii., 1334). Another remarkable case is described in the *Arch. f. Schiffs- u. Tropen-Hygiene* (vol. xxviii., 2) by Dr. O. Urchs, whom it nearly misled. He was taking medical charge of miners at Moengo, in Dutch Guiana, when he was called out one night to see a young Japanese, usually in good health except for attacks of fever, but now suddenly taken ill with rigors (temp. 103° F.), severe shock, and extreme pain in the belly; he was a picture of misery, groaning all the time, both hands always pressed against the abdomen. The belly was hard as a board, any movement increased the pain, which seemed to be at its worst 2½ inches below the right costal margin. Patient was constipated and had been vomiting, so it appeared that a laparotomy might be necessary. But when better lighting was obtained, there showed up, in spite of the tension of the abdominal wall, a swelling filling the left hypochondrium, and extending to the navel, painful, and most particularly tender along its edge. This was recognised as an acute malarial swelling of the spleen, which causes great pain by the sudden stretching of capsule, mesentery, and ligaments. With injection of 15 gr. of quinine, cold compresses, and the like, the pain ceased during the night, and next day urobilin was found in the urine, tertian parasites in the blood, and the blood picture proved this attack to have been a relapse.

Arris and Gale Lecture

ON THE

MECHANISM OF THE LARYNX.

Delivered before the Royal College of Surgeons
of England on April 28th, 1924,

By V. E. NEGUS, M.B., B.S. Lond., F.R.C.S. Eng.,
CLINICAL ASSISTANT, THROAT AND EAR DEPARTMENTS, KING'S COLLEGE HOSPITAL.

An impression is gained from the literature that the larynx is the organ of voice, and that it has been evolved to subserve this function. I suggest that this view is erroneous, and that its use for purposes of voice is only a subsidiary one of several functions. In examining the larynx in various types of animals one is impressed by the fact that there is no marked relation between the structure of the organ and the vocal powers of its possessor. Vocal cords similar to those of man are to be seen in many animals which are naturally silent, as in most bears, whilst there is a complete absence of vocal cords as we usually picture them in many habitually noisy species such as the domestic cow. Many instances might be given, but the point needs a special study of its own.

To investigate the functions and mechanism of the larynx we must approach the subject with an open mind, and trace the evolution of the organ from its most primitive beginnings; later on we can examine each secondary modification as it appears, and see what relation it has to the habits of the individual, without blurring our perception by concentrating attention solely on the habit of phonation.

Evolution of the Larynx.

In the dipnoi, or lung fish, there is a mechanism developed to ensure survival of the individual when the water of the river in which it lives has dried up. This mechanism takes the form of lungs, morphologically comparable to those of mammals. The pulmonary outgrowth springs from the ventral wall of the fore-gut, and at its orifice a sphincteric band of muscle is developed to keep it closed at all times except when air is passing through; food and water are thereby prevented from entering. A primitive larynx thus comes into existence, with the primitive function of closing the air tract.

To compare this process of the evolution of a simple larynx (Fig. I.) with what occurs in human embryology, we derive information from the work of Prof. J. E. S. Frazer in particular. The pulmonary outgrowth appears in the floor of the fore-gut in the third week; the actual boundaries of the primitive sagittal fissure are derived from the sixth visceral arches. At first the fissure lies flat in the pharyngeal floor, just as it does in the lung fish, but the further processes of development carry it beyond this simple stage, and it is found that at no time is there merely a sphincteric band of muscle present to close its orifice; for many modifications creep in in relation to varied functions that must be carried out, each one of which will be studied in its correct place.

Origin of Arytenoid Cartilages.—As air is forced into the lungs by contractions of the pharynx in Dipnoi, and as the call for air is slight, passive dilatation of the glottis is all that is required; but as the demand for air increases, so some mechanism for active opening has to be evolved. This mechanism is seen in the form of simple dilator muscle fibres in Protopterus, one of the Dipnoi. But these simple fibres are not so efficient as the dilator fibres of the iris of the eye, for instance, and so we find that in Sirens and Axolotl a lateral cartilage has made its appearance on either side of the trachea, and to its pointed extremity the dilator fibres gain attachment. These cartilages serve to maintain patency of the air tube, and in some Salamanders and all higher forms the tips are separated off by muscle action, and appear as arytenoid cartilages, whilst the lower parts fuse together and form a primitive cricoid ring. The primary function of the arytenoids is for opening, and not for closing the glottis, for the latter action can be done efficiently by the sphincteric muscle. In the human embryo the margins of the glottis, made up of the sixth arches, are found to grow rapidly, and become known as the lateral masses. By a condensation of mesenchyme cells in them there appear the nuclei of the arytenoid and cricoid cartilages; the latter arises in two centres, which subsequently coalesce, in just the same way as the previously separated lateral plates are seen to fuse in animals above the level of Axolotl. At no time, however, are the arytenoid and cricoid cartilages continuous, although they arise from contiguous collections of cells.

Thyroid Cartilage.—In the ventral ends of one or more pairs of visceral arches are developed cartilaginous elements, which will form the thyroid cartilage; in some low forms, such as Echidna, these bars are fused both to the hyoid system and to the cricoid, and help to complete the scaffolding of the larynx.

In the human being the thyroid cartilage is developed in the ventral end of the fourth arch only; only at an early time is it fused either to the hyoid or cricoid elements. Both dilator and sphincteric muscles gain attachments to the cricoid. The sphincter muscle also takes origin from the thyroid element; its continuity at its ventral extremity then becomes interrupted, so that it takes the form of a horse-shoe instead of that of a complete circle.

In such low types as the Alligator the sphincteric muscle wraps round, but is not inserted into the arytenoid, but in higher forms it gains attachment to the cartilage at what becomes the muscular process. The muscle is thus split into five elements—namely, thyro-arytenoideus and crico-arytenoideus lateralis on either side, and inter-arytenoideus in the position of the posterior or dorsal commissure.

Thyro-Arytenoid Fold.—The primitive lateral cartilage is very long, but does not extend quite to the cephalic end of the margins of the glottis, and the forward portion of the boundary of the fissure remains as a membranous fold; this represents the thyro-arytenoid fold, and it is of vital importance, in that it is capable of allowing separation of the tips of the lateral or arytenoid cartilages by virtue of its elasticity. In the human embryo the formation of the thyro-arytenoid fold is complicated by the early formation of a ventricle at the end of the second month; the process can be traced, however, as a condensation of cells in the mesenchyme of the lateral mass, resulting in the formation of what is known as the chordal nodule. Strands of cells run from the latter to the thyroid, cricoid, and arytenoid cartilages, and by stretching out of this tissue between the thyroid and arytenoid there is developed that part of the thyro-arytenoid fold which is known as the vocal cord.

The Definitive Larynx.—In its simple form the larynx consists of cricoid, thyroid, and arytenoid cartilages, and thyro-arytenoid folds, with sphincteric and dilator muscles of varying degrees of complexity; as such it is seen in most reptiles and birds. There are no epiglottis or ary-epiglottic folds, and no separation of thyro-arytenoid fold into true cords and ventricular bands. In endeavouring to discover what part of the complicated human larynx represents the primitive organ as we have thus described it, we rely on the observations of Prof. Frazer. He states that a line drawn back along the true cord, and then upwards along the border of the arytenoid eminence to the inter-arytenoid notch, corresponds with the margin of the original sagittal opening in the pharyngeal floor; this part represents roughly the simple larynx as we have described it. All the parts above this line, such as the ary-epiglottic folds, the cartilages of Wrisberg and Santorini, the major part of the epiglottis, and the ventricular bands, are derived from the general pharyngeal cavity, and not from the pulmonary outgrowth. They are modifications designed to subserve functions we have yet to study, and are parts superadded to the primitive organ; furthermore, by their appearance, the original function of the margins of the glottis, which is to act as a valve for the protection of the air tract against entrance of substances other than air, has been relegated to more recently added structures.

Modification in Shape of Primitive Glottis.—For the efficient carrying out of its primary function of preventing the entrance of food and water into the pulmonary apparatus, it is interesting to notice a change in the shape of part of the simple larynx, which appears in amphibians, reptiles, and birds, and is repeated in the case of many mammals. The configuration is found to be such that the margins of the glottis, when in apposition, present a surface which is convex and dome-shaped above, and concave and vaulted below. The margins of the glottis—made up of the arytenoid cartilages and thyro-arytenoid folds—take on this shape because it is necessary that they should be able to withstand a considerable pressure of water present in the pharynx, and to prevent its entrance into the lungs. At the same time it is not desirable that they should obstruct the exit of air from the trachea.

As a result of this peculiar shape, when the pressure of water—and incidentally that of air—becomes increased on the pharyngeal surface of this laryngeal valve, the margins are the more firmly pressed together. As a consequence, there is relegated to the sphincteric muscle the simple rôle of bringing the margins into apposition, after which closure is more or less automatically maintained; as the pressure rises, so the coaptation of the margins becomes more intimate. When it is desired, however, that air should enter the trachea, the dome-shaped glottic margins must be separated by abductor muscle action, and in consequence the latter muscles attain a greatly enhanced importance in this valvular type of larynx, in comparison to that which they possess in the more simple organ of Protopterus.

FIG. I.

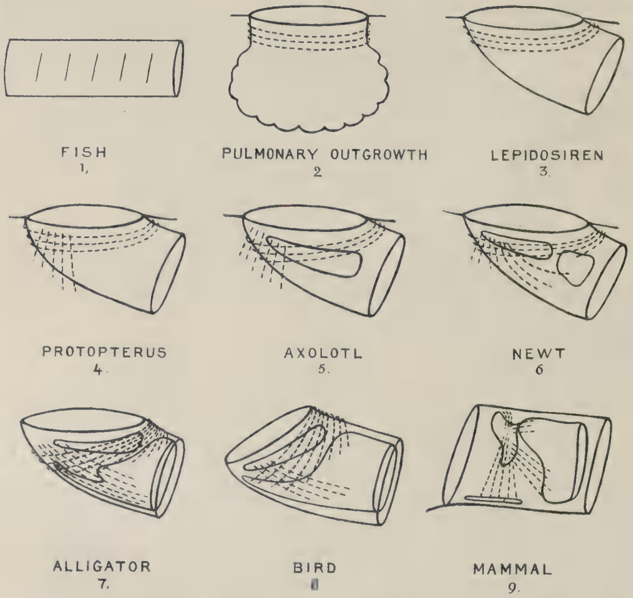


Diagram illustrating the evolution of the larynx.

The dome-shaped modification of the larynx thus confers a mechanical advantage as long as the abductor muscles are efficient, but at the same time it leads to the danger of prevention of entrance of air into the lungs if the dilator mechanism breaks down.

We conclude, then, that the simple type of larynx so far described is a valve designed to guard the entrance of the pulmonary air tract against the entrance of substances other than air; it is modified so as to be able to open actively while respiration is proceeding. The many other functions it takes on, such as those subserving olfaction, circulation, phonation, and so on, are thrust upon it in higher forms, but are not those for which it was developed in the more lowly types of animals.

MODIFICATIONS FOR PURPOSES OF OLFACTION.

Mr. R. H. Burne has given a comprehensive description of the olfactory organ of teleostean fishes (Fig. II.), and has described the mechanism by which water is made to circulate over the olfactory rosette. There is found to be no communication of this simple nose with the food tract in the majority of fish; in Dipnoi, however, such a communication exists. In these fishes inspiration is effected by the swallowing of air through the mouth, as occurs also in some Salamanders and Newts. While the air-breathing proceeded there would therefore be no circulation of air through the nose, and the olfactory sense would not be acute; therefore a communication, or choana, is present in the roof of the mouth, whereby air can be made to pass over the olfactory rosette, so as to give off sufficient odour for perception of scent. There is no necessity for air to pass through the nose, as far as respiration is concerned, in these cold-blooded animals.

In reptiles the mouth does not have to be kept open for chewing, and there are various mechanisms to ensure nasal breathing; in mammals which rely on the olfactory sense to warn them of enemies and poisonous foodstuffs, some mechanism has to be provided to ensure that a current of air shall pass through the nose while the animal is eating with its mouth open.

Primitive Function of Epiglottis.—The epiglottis has this function of shutting off the air tract from the mouth, in association with the soft palate; its primitive function, therefore, is one of olfaction, although it has subsequently taken on other duties. Man has not a keen olfactory sense and his epiglottis is somewhat degenerated; similarly we can see that in microsmatic animals such as Sea Lions, some Cetaceans, and Monkeys, the epiglottis is comparatively small, whilst in the macrosmatic Dogs, Cats, Deer, and so on, it is big and efficient.

In the human fœtus the pulmonary outgrowth appears at about the fifteenth day, and the olfactory pit at the twenty-first. The bucco-nasal membrane breaks down at about the thirty-fifth, and the palate is only completed by about the forty-ninth day. These facts illustrate the probable sequence of events in the evolution of nasal breathing, and indicate that the latter is a secondary modification of respiration.

MODIFICATIONS FOR PURPOSES OF RESPIRATION.

In a Lizard the choana opens on the roof of the pharynx at a right angle, and the glottis opens from the floor of the pharynx in such a way that the air stream has to turn at two more right angles, one from pharynx into larynx, and a second one from the latter into the trachea. Furthermore, there is a wide interval between the choana and the glottis.

Straightening of Air Tract.—There can be traced various stages in which these bends in the air tract have been straightened out, and a good example is seen in many deer and antelopes. (Fig. III.) In them the nostril opens in the axis in which the head is held when running; the nose is wide and straight; the naso-pharynx, with the help of the soft palate, is wide, straight, and extremely long, and opens at the level of the larynx. The latter is brought into apposition with the nasal tube by means of the pharyngeal walls behind and at the sides, whilst in front the passage is made continuous by means of the epiglottis and soft palate; the former lies above the soft palate in the intra-narial position. The aperture of the glottis is tilted, and is at right angles to the axis of the pharynx, and does not lie flat in the pharyngeal floor as it does in most reptiles; consequently there is now no angle between the larynx and the trachea. Air is enabled to pass practically in a straight line from nostril to lung.

Air Tract in Man.—In man the needs of respiration are not so great, and the air tract is not so straight. The anterior nostril opens at right angles to the long axis of the head, and the nasal passage is tortuous; the soft palate is short and the epiglottis is small, so that the larynx is never intra-narial, not even, as far as I have been able to discover, in the fœtus examined in situ in the uterus. (Fig. IV.)

FIG. II.

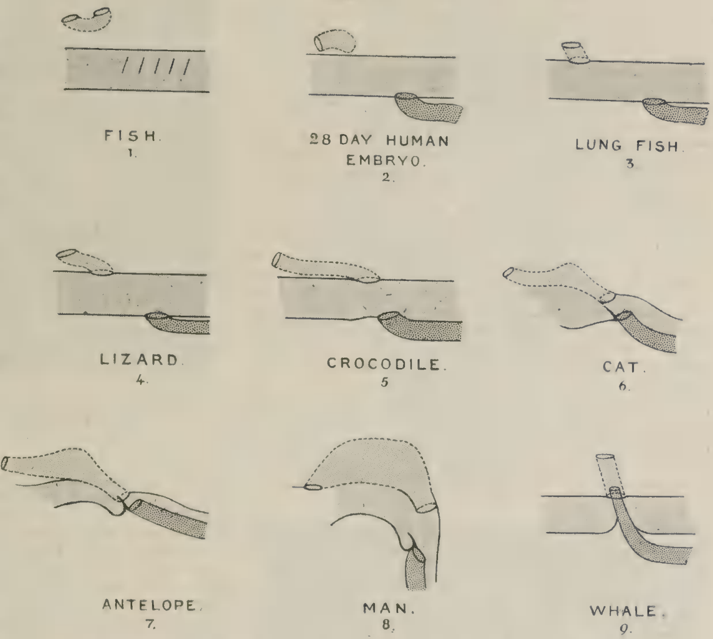


Diagram illustrating modification of larynx in relation to olfaction.
Darkest stippling = pulmonary air tract. Lightest stippling = food tract.
Medium stippling = nasal passage.

The axis of the glottis is in line with that of the trachea, and the mechanism of this change of inclination comes about in early fœtal life through overgrowth of the lateral masses, as compared with that of the central mass, which is a formation lying between the ventral ends of the third and fourth arches. The whole larynx of man drops in the neck from early fœtal life onwards because of four reasons. First, there is no necessity for its apposition to the nasal tube for purposes of olfaction or respiration; second, there is a big tongue in a short muzzle; third, because of changes in the vertebro-basal and pituitary angles as compared with lower types; and fourth, because of downward growth of the face.

In the child mouth-breathing is difficult because of lack of habit and the marked development of the tongue for purposes of suckling; in the adult it is frequently resorted to, although with detriment, because of deficient warming of the air.

Length of Arytenoids.—We have already seen that arytenoid cartilages were evolved in order to open the glottis during the passage of air. In most reptiles the cartilages are very long, but in the higher mammals and in man there are many variations in length, the reason for which must be sought for. As the aperture of the glottis lies flat, or at most only slightly tilted, in the pharyngeal floor of most Fishes, Amphibians, Reptiles, and Birds, so it is possible for the cross-section of the air-way to be increased to an indefinite extent by simple lengthening of the fissure. The glottis when open in these animals is of a triangular shape, the sides very long, and the base very short, and if the sides are long enough, a very big sectional area will be available for the passage of air.

In the case of those animals, however, which have a larynx in which the aperture of the glottis is tilted to a degree approaching a right angle—a modification for diminishing friction of air—indefinite lengthening of the margins of the glottis is impossible, because a laryngeal aperture of this type would not allow deglutition to proceed, if placed transversely in the pharynx. Therefore the glottis is found to be less slit-like in mammals, and to approach more nearly to a broad and short shape when open.

The optimum length for the arytenoids by mathematical calculation is approximately seven-tenths of the diameter of the larynx; at this length the greatest possible sectional area is obtained for the passage of air, and any variation either above or below seven-tenths decreases the available air-way. The extremely fast-running Persian gazelle shows a length of arytenoid 6·9, as compared to a laryngeal diameter of 10; this is very near the optimum, and gives a sectional area which we shall call 49.

Man has need of long valvular thyro-arytenoid folds, otherwise known as vocal cords; consequently he could not have long arytenoids unless his larynx were greatly increased in size, and he is limited in pace thereby. In his case the length is as 4·5 and the sectional area 39. A sloth is still worse off, and has a length of 3·6 and an area of 29. These calculations only show the relative degree to which the larynx can open in each case, and do not give the actual area available for the passage of air, because we have not taken into account the size of the larynx. If we compare the actual cross-section available for air when the glottis is widely open, we find these facts in the case of a man and a horse; the former has a speed compared to the latter roughly as 1 : 2·4, whilst the ratio of the available air-way for each pound of body-weight is approximately 1 : 2·3.

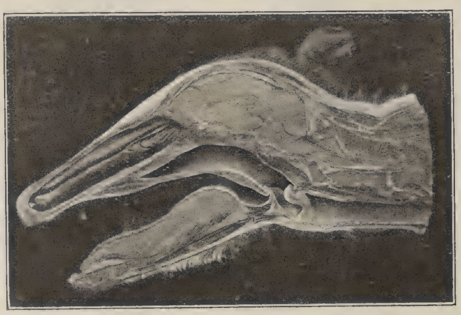
This does not show exactly how much air can pass in either case, but it shows that a man has a poor provision for rapid oxygenation of his tissues in comparison with a fast-running quadruped; so it is evident that in spite of a body otherwise well designed for running, the human individual is at a disadvantage because of the choke at the narrowest part of his air-way—namely, the glottis.

Variations in Size of Larynx.—In some fast-running animals, such as wolves and dogs, there are long and well-formed vocal cords, while the arytenoid cartilages are not so long in comparison to the diameter of the larynx as they are in the case of antelopes. This would produce choking at the glottis were it not for the fact that the larynx itself is very big in comparison to the size of the trachea; the aperture of the glottis is thus large and allows the passage of a volume of air sufficient to carry on respiratory exchange at the high level demanded by the rapid metabolic rate of the animal.

Accessory Aids to Respiration.—It is possible that the laryngeal saccule in man represents a degenerate relic of a mechanism for helping in respiration, by means of which partly used air can be expelled from the lungs, mixed, and forced in again to yield up more oxygen. The saccule appears to me to correspond morphologically and functionally to the air sacs of the higher Apes, and functionally to those of some Seals and Frogs, but the subject needs a separate study by itself.

Respiratory Movements of Glottis.—The primitive larynx is closed except when air is passing; the larynx in higher mammals is open except when food is passing. The movements in man at inspiration and expiration are due, in part, to this primitive mechanism, and also to the fact that the larynx is only a specialised part of the tracheo-bronchial tree, and that the whole of the latter dilates at inspiration to such in fresh air, and contracts at expiration to expel used-up air. Furthermore, the amount of dead spare air is considerably diminished by these movements. Contraction and dilatation of the trachea are much greater in some fast-running animals than in slower man, and the amount of muscle tissue is proportionally increased.

FIG. III.

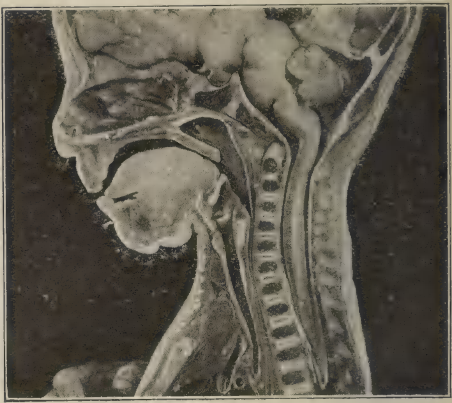


Modification of air tract for purposes of respiration. Head of an Indian Muntjac, or barking deer, in median sagittal section. (From a photograph by Henry George.)

EFFECTS ON CIRCULATION.

Sir Arthur Keith has brought to my notice, and impressed on me the importance of, the influence of movements at the glottis on circulation in the lungs; I have also derived much information on this subject from Prof. J. S. McDowall. The glottis in man is usually not quite fully dilated during inspiration, and because of this, and also owing to the narrowness of the aperture, slight obstruction is given to the inrushing air. Intra-thoracic pressure must therefore be less than atmospheric pressure for a short interval; blood is drawn into the right auricle because of the diminished pressure on the pericardium, and the right ventricle obtains a larger supply. At the same time the lowered intra-alveolar air pressure causes the pulmonary capillaries to dilate, so that a more free and more rapid circulation of blood passes through them to the left side of the heart; the left ventricle pumps out more blood, and the aortic pressure rises. During expiration the slight obstruction offered by the narrow and partly closed glottis produces a considerably raised intra-thoracic pressure, so that the pulmonary capillaries are compressed and the pulmonary circulation is retarded; consequently the aortic blood pressure falls. There is, however, a certain amount of compensation, because of the fact that some blood is squeezed out of the lungs into the left side of the heart.

FIG. IV.



Head of a seventh month fœtus in median sagittal section. (From a photograph by Henry George.)

To help in maintaining an efficient pulmonary circulation, the movements of the glottis vary in accordance with the needs of the individual, and increase on exertion. The mechanism is not present in Fish, Amphibians, and some Reptiles, but is one found only in animals whose breathing depends in part on suction—that is to say, it is only present in those animals which suck air into the lungs by the movements of the ribs and diaphragm. In the lower Reptiles air is pumped into the lungs by various mechanisms, and it is therefore impossible for a condition of negative intra-pulmonary pressure to occur; the conditions are the same as in a Mammal on which artificial respiration is carried out by a pump. In fast-running animals the design of the glottis is such as to offer as little resistance as possible to the passage of air; it is probable, however, that in them such respiratory glottic movements as occur play a part just as in the case of man.

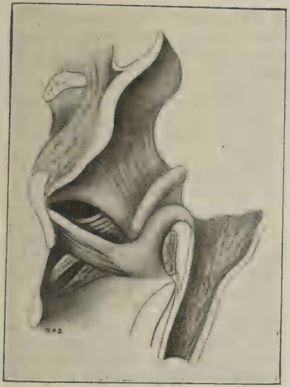
MODIFICATIONS FOR PURPOSES OF DEGLUTITION.

Protection of the Air Tract During Deglutition.—The pulmonary outgrowth springs from the middle line in the floor of the fore-gut, partly because that is a point of little resistance; the larynx has been shown to develop relations with the nose for various reasons, but it is to be emphasised that it is not guided in its earliest forms by considerations of future relation to the nasal tube. Air enters in very low types by the mouth, and as the path of evolution is traced up there is to be found in all cases a continuation of this close relation of air tract and food passage. When nasal respiration is firmly established there is still a necessity for crossing of the two streams; if the lung bud had grown out of the dorsal wall of the fore-gut, as it does in fact, in some fishes, the trachea and nose might well have been brought into such close relation that no larynx would have been needed. As Mr. Alex. R. Tweedie has pointed out to me, there would have been a corresponding loss in powers of phonation.

Deglutition in Reptiles.—There are various mechanisms for preventing the entrance of food and water into the air passages. In Reptiles this takes the form of simple apposition of arytenoids and thyro-arytenoid folds, by means of the sphincteric muscle; there is no epiglottis, and there is no process of mastication.

Use of Epiglottis.—In mammals with a simple larynx, such as Marsupials and the Cat tribe, closure is of much the same type, except that during the swallowing of liquids help may be derived from the epiglottis, which has been evolved primarily for other purposes. The epiglottic cartilage has attached to it lateral folds, and these, in conjunction with the posterior palatine folds, cause the production of a lateral food channel, along which liquids may pass, probably without complete closure of the glottis or movement of the epiglottis away from the nasopharynx. When a large bolus is swallowed, however, the epiglottis is drawn away from the raised soft palate up to the base of the tongue by means of the hyo-glosso-epiglottic muscle, and the glottis is closed by sphincteric muscular action.

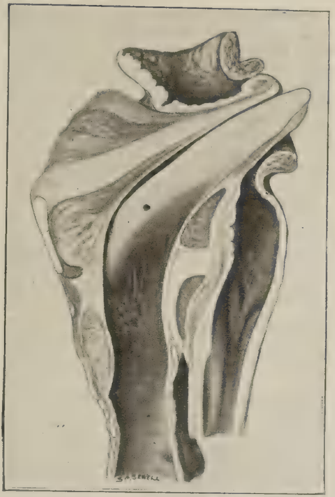
FIG. V.



Modification for purposes of deglutition. Median sagittal section of larynx of man of 50. (From a drawing by S. A. Sewell.)

Swallowing of Liquids in Man.—In chewing animals and in man the lateral food channel is made more efficient by means of aryteno-epiglottic folds, which protect the margins of the glottis from the entrance of food or water more efficiently than do lateral epiglottic folds. As the former take on this function, so the latter disappear, and in man they are absent. It is seen, then, that the epiglottis is called in to help during the swallowing of liquid: it is of little assistance when a solid bolus is passing (Fig. V.). When the ary-epiglottic folds are high and thin, as in man, there are developed in them supporting struts—namely, the cartilages of Wrisberg; their origin from the epiglottic cartilage has been dealt with fully by Göppert. They are almost always well developed in the human larynx, and by virtue of their presence the respiratory movements of the arytenoid cartilages are not interfered with; they reach their greatest development in whales and dolphins (Fig. VI.), if I am correct, and in conjunction with a complete arcus palato-pharyngeus enable simultaneous respiration and deglutition to occur. It is probable that they permit a similar action to take place in the human infant, and also in those with the power of pouring pints of beer down their throats while breathing.

FIG. VI.



Modification for purposes of deglutition. Median sagittal section of larynx of dolphin (*Delphinus delphis*). No. 1169E, Mus. Roy. Coll. Surg. (From a drawing by S. A. Sewell.)

Swallowing of Solids in Man.—When solid masses or large quantities of liquid are passing into the œsophagus, the whole larynx with the epiglottis is pulled up to the base of the tongue. The epiglottis is not sufficiently large, nor does its position call for the presence of a hyo-epiglottic muscle; the latter is represented by a rudimentary hyo-epiglottic ligament.

Closure of the laryngeal aperture is brought about by the action of the various divisions of the sphincteric muscle—namely, thyro-arytenoid, thyro-epiglottic, ary-epiglottic, and inter-arytenoid. The arytenoid cartilages are approximated to each other and drawn towards the cushion of the epiglottis, and the cartilages of Wrisberg are similarly dealt with by fibres of the external thyro-arytenoid. The aperture of the larynx thereby closes in a T-shaped manner; the action is facilitated by the power of rotation of the cricoid on the thyroid, an action not possible in low forms.

The inter-arytenoid muscle runs underneath the hook-like processes of Santorini and tilts them forward as it contracts in this action; to provide an articulation for this purpose there is present in the muscle of many bolting animals, but not in man, a cartilage, probably a relic of the procricoid.

Functions of Cartilages of Santorini.—To the tips of the cartilages of Santorini are attached many fibres of the œsophageal aponeurosis, the suspension of the œsophagus, in fact, not being limited to attachment to the cricoid plate. When the cartilages are tilted forwards, the œsophagus is thus caused to open in a funnel-shaped manner, and so there occurs a beautiful mechanism by means of which the larynx is closed and the œsophagus is opened.

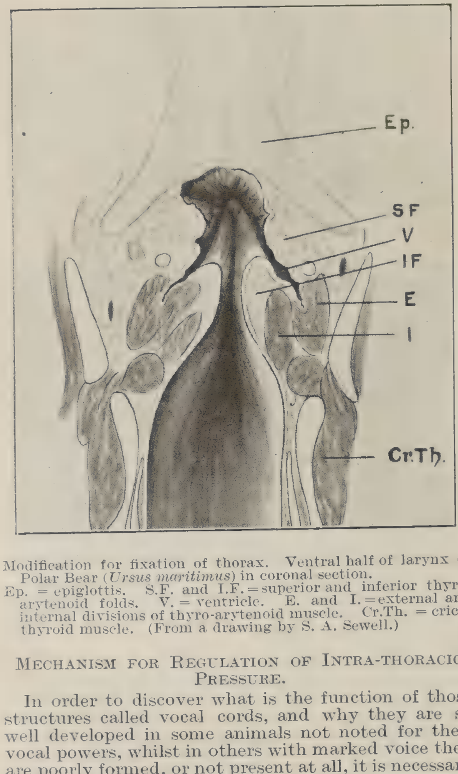
EXPULSION OF FOREIGN BODIES FROM AIR TRACT.

In coughing and sneezing a forced expiratory effort is made while the glottis is closed; when the air pressure has risen to a sufficient height the glottis opens, and the rush of air carries out mucus or other foreign bodies. In coughing the soft palate closes the naso-pharynx; in sneezing it leaves it partly open.

VOMITING AND AIR-SWALLOWING.

If an inspiratory effort be made with the vocal cords approximated to one another, and the crico-pharyngeal sphincter relaxed, air will enter the œsophagus; by closure of the crico-pharyngeus muscle and contraction of the œsophagus, the air can now be forced into the stomach. As a preliminary to vomiting, air-swallowing occurs; this is succeeded by violent emptying of the stomach. The glottis is closed and the thorax is compressed by muscular action until intra-thoracic pressure reaches a high level, when the laryngeal orifice suddenly blows open and allows an escaping blast of air to remove food débris from the upper air-passages.

FIG. VII.



Modification for fixation of thorax. Ventral half of larynx of Polar Bear (*Ursus maritimus*) in coronal section.
Ep. = epiglottis. S.F. and I.F. = superior and inferior thyro-arytenoid folds. V. = ventricle. E. and I. = external and internal divisions of thyro-arytenoid muscle. Cr.Th. = crico-thyroid muscle. (From a drawing by S. A. Sewell.)

MECHANISM FOR REGULATION OF INTRA-THORACIC PRESSURE.

In order to discover what is the function of those structures called vocal cords, and why they are so well developed in some animals not noted for their vocal powers, whilst in others with marked voice they are poorly formed, or not present at all, it is necessary to examine all the habits of animals, and not merely the habit of phonation; it is possible by this means to discover whether there is any factor which has an influence on the valvular arrangements of the thyro-arytenoid folds.

Independent Use of Fore-limbs.—In man there is one habit in particular which has helped him to advance rapidly along the path of evolution and to excel other species, and that is the superior power he possesses of using his fore-limbs for actions independent of progression. Having graduated as an arboreal creature, he has learnt to hold on to the branches of trees, and later to weapons and implements; he has developed a prehensile thumb, and the power of holding small objects in a stationary position at arm's length. He can suspend the weight of his body from his arms, but with less ability than can most monkeys; he can also adduct his arms with considerable power. He has, in fact, a great advantage over those animals which use the fore-limb mainly as a pivot on which the weight of the trunk is poised, while the hind-limb pushes the body forward in progression.

When a man adducts his arms against pressure he stops breathing; this may be done either because it is impossible for him to go on breathing, or because he gains some mechanical advantage by the action; the latter is the correct explanation. It is desirable that the thorax should be brought to rest, so as to give a fixed point of origin to the various muscles arising from it, and especially to those which move the arm at the shoulder-joint, the pectoralis major in particular. As the pectoralis major contracts, two things may happen: either the ribs are elevated and inspiration aided, or else the arms are pulled inwards and downwards while the ribs remain stationary. To make certain that the latter action shall take place, the abdominal muscles contract and hold down the lower ribs, but it is highly probable that in most instances the action is assisted by the imprisonment of air in the thorax.

Negative Intra-thoracic Pressure.—As the ribs tend to rise, so the capacity of the thorax would be increased, and air would normally rush in to fill the enlarged space. But if a laryngoscopic examination be made of a man who is adducting his arms against pressure, it will be seen that the vocal cords close with a snap at the beginning of the action. As no air can enter the lungs to fill the enlarged space that would be created if the ribs were elevated—provided that the diaphragm be in partial contraction—it is obvious that the thoracic walls will tend to come to rest before the intra-thoracic air pressure has fallen to a low level. Owing to the potential or actual diminution in pressure within the chest, there is brought in a new factor to assist the muscles which fix the thorax, in the form of atmospheric pressure. The result is that the ribs attain a stationary position with less expenditure of energy than would be required if no vocal cords existed, and a fixed point of attachment to the muscles in question is provided for.

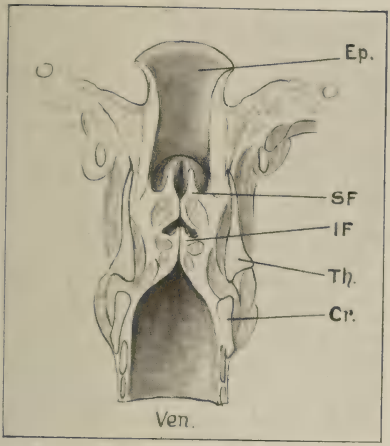
To control the changes of pressure produced it is certain that sphincteric action at the larynx is insufficient by itself, wherefore valvular action has to be brought into play, in the same manner as occurs in the heart, veins, ileo-cæcal valve, and other regions; the mechanism is, in fact, a favourite one in the body. It is found that almost all animals possessed of the power of independent use of the fore-limbs have also an inlet valve mechanism at the glottis, formed by what are usually called the vocal cords; animals that spring by means of the fore-limbs from a crouching attitude are similarly provided. Those animals without these habits have no valvular folds. Thus it is found that the Hare has no valves, but the Squirrel has; Sheep, Oxen, and Deer have none, but Bears, Lemurs, Monkeys, and Men have (Fig. VIII.). The Chimpanzee is of more arboreal habits than the Gorilla and has better valves; he has not better voice, however.

I have recently learnt from Prof. McDowall that temporarily diminished intrathoracic pressure does not necessarily cause stopping of the pulse, as Müller's experiment would lead us to believe; on the contrary, the aortic blood pressure is caused to rise, and the circulation is actually aided.

Positive Intrathoracic Pressure.—It is usually said that fixation of the thorax is attained by the taking of a deep inspiration and compression of the chest walls on this imprisoned air during closure of the glottis. Here, again, sphincteric action at the glottis is insufficient to withstand the high pressure produced, and valvular action again comes into play by means of the ventricular bands. The action certainly occurs in man at times, but I do not believe it is by any means the usual method during forearm efforts.

The ventricular bands are the free and undercut lower margins of the ary-epiglottic folds, and in a form capable of functioning as a valve they are almost entirely limited to the Gibbons, Chimpanzee, Orang, Gorilla, and Man. In practically all other animals the only valve available is one capable of preventing entrance of air into the lungs, and in consequence the mechanism of thoracic fixation by raised pressure would be one practically peculiar to the five species mentioned. (Fig. VII.) It is nevertheless true that many animals, apart from these five, can fix the thorax, and it is therefore to be supposed that they do so by the method of diminished pressure. It is necessary to discover what is the reason for the special mechanism found in the higher apes and man.

FIG. VIII.



Modification for fixation of thorax. Coronal section of larynx of Yellow-Fronted Lemur (*Lemur flavifrons*). Vocal cords and ventricular bands both capable of acting as inlet valves: there is no valvular arrangement for preventing exit of air.
Ep. = epiglottis. S.F. and I.F. = superior and inferior thyro-arytenoid folds. Th. = thyroid cartilage. Cr. = cricoid cartilage. Ven. = ventral half of larynx. (From a drawing by S. A. Sewell.)

Function of Ventricular Bands.—It is well known that in straining at stool the ventricular folds in man act as a valve, and that raised intrathoracic pressure is produced. It is possible that mobility of the upper ribs, present in Gibbons, the three other higher Apes, and man, gives a clue to the necessity for this special mechanism. Upper thoracic breathing has been described by Sir Arthur Keith as peculiar to the five species under discussion, and it is associated with mobility of the ribs. Contraction of the diaphragm in an effort to raise the intra-abdominal pressure tends to elevate the lower ribs. If the upper thorax is comparatively immobile, as it is in most animals, the lower ribs can be fixed and the diaphragm moves downwards and forwards as a piston; but if the upper thorax is freely mobile the ribs may move and the diaphragm remain stationary. Therefore, it seems probable that the ventricular bands are developed to act as a valve when it is desired to fill the thorax, and to retain the air under increased pressure. Thereby the ribs are spread, and the lower ribs are less likely to be elevated when the diaphragm contracts; consequently, the diaphragm has a more stationary attachment on which to exert its pull, and in its contraction will be able to raise intra-abdominal pressure with better results than would otherwise be obtained. Furthermore, when the thorax is full of air, its lower aperture has an increased diameter both transversely and antero-posteriorly, so that contraction of the diaphragm will take place at a mechanical advantage, and will cause a greater compression of the abdominal viscera if occurring while this position is maintained.

MODIFICATIONS FOR PHONATION.

I have attempted to explain that the larynx has taken up a certain position in order to subserve functions of olfaction and respiration, and that the peculiar situation it occupies in man can be understood if various structural characteristics of the human being are taken into account. I have endeavoured to show that the epiglottis was evolved for purposes of olfaction; the ary-epiglottic folds and cartilages of Wrisberg to provide a lateral food channel for the passage of liquids in animals which masticate their food; and the cartilage of Santorini as an important part of the mechanism by which the œsophagus is suspended and opened.

The arytenoid cartilages have been described as modified in length for respiratory reasons, and the muscles attached to them as concerned in the sphincteric closure of the larynx during deglutition, and in dilatation during respiration; the respiratory movements of the glottis were said to have a marked effect on the circulation of the blood. To those structures called vocal cords has been ascribed the function of preventing entry of air into the lungs for purposes of fixing the thorax, and the suggestion was made that valvular ventricular bands are concerned in the mechanism of raising intra-abdominal pressure in certain animals.

Because of these various observations, and because of a study of the vocal habits of animals in relation to the anatomical structure of the larynx in each species, the suggestion is reiterated that all mammals have an organ suitable for the production of sound, and that the extent of voice production depends in the main on the necessities and intelligence of the individual; some animals, however, and especially those of arboreal habits or arboreal ancestry, are better provided for than are others.

A discussion of the mechanism of phonation cannot be entered into here, but it will be sufficient to say that the evidence of comparative anatomy indicates, in my opinion, that variations in pitch of the voice are brought about by means of contraction and relaxation of the thyro-arytenoid muscles; and that raising of the pitch is due to increased contraction of these muscles, by virtue of which their elasticity is increased, while the rate at which they will recoil after being blown apart is accelerated.

This is a different view from that which ascribes to these muscles the function of relaxing the vocal cords, because in the former case the pitch would be raised by contraction of the muscles, while in the latter it would be lowered. I think that the attachment of the œsophagus to the cartilage of Santorini has an important function in the mechanism of phonation, but cannot elaborate the point in this paper; the evolution and mechanism of ary-vocalis muscle fibres must also be left out of account at present.

I would take this opportunity of recording my deep obligation for the privilege of permission to work in the laboratories of the Royal College of Surgeons of England, and also my sincere gratitude for the kindness extended to me by Sir Arthur Keith, who has given me invaluable advice and criticism in my work. I have also derived much information from Mr. Burne, and am very grateful to him. Acting on the advice of Sir StClair Thomson, Prof. Frazer, and Mr. T. B. Layton, I have attempted to learn something of the mechanism of the human larynx by the aid of comparative anatomy and physiology. In the study of the larynx of animals with this object, I am deeply indebted to Dr. C. F. Sonntag for placing at my disposal a wealth of material, and the use of the laboratories of the Zoological Society of London.

An Address
ON THE
FUNCTION OF HÆMOGLOBIN IN THE BODY.

Delivered at St. Mary's Hospital on May 8th in the course of lectures on Pathological Research in its Relation to Medicine.

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HÆMOGLOBIN has two main functions in the body—the carriage of oxygen and the carriage of acids, including CO_2; the modes of carriage are different, but equally important. That of oxygen has long been known, and its characteristics have been the subject of many investigations; that of acids and CO_2, though often discussed and doubted, at last seems certain beyond dispute. A possible third function of hæmoglobin has recently appeared from the work of Miss Robinson in Hopkins's laboratory at Cambridge. She found that hæmoglobin and its derivatives, methæmoglobin and hæmin, are able to accelerate very considerably the oxidation of unsaturated fatty acids—e.g., of linseed oil. Its non-iron containing derivative, hæmochromogen, produces, however, no such acceleration. The importance of this observation lies in the fact that a certain amount of hæmoglobin certainly lies inside the tissues themselves; it does not occur merely in the blood. Possibly its function in the tissues is that of an oxidative catalyst. This property of hæmoglobin appears not to be a consequence of its easily reversible combination with oxygen: it occurs equally in hæmin and methæmoglobin, or in hæmoglobin fully saturated with carbon monoxide. The fact that the katalytic action does not occur with hæmochromogen suggests that the accelerating power of hæmoglobin lies in its content of iron. Iron, as O. Warburg has found, is an important agent in katalysing many oxidations analogous to those occurring in the body. The action of hæmoglobin on the oxidation of unsaturated fats appears to be even more effective than that of an amount of inorganic iron equal to that contained in the hæmoglobin. It would seem possible that the faulty iron metabolism occurring in such conditions as anæmia may result in slow or defective oxidation in the tissues. This might be one cause of the dyspnœa associated with those conditions. I have discussed this possible function of hæmoglobin first since little is known about it, and we may now turn to the other functions which are better understood.

REASONS FOR EXISTENCE OF HÆMOGLOBIN INSIDE CORPUSCLES.

In nearly all animals hæmoglobin exists inside formed corpuscles in the circulating fluid; it does not usually occur simply dissolved in the plasma. There has been much speculation as to the cause, or function, of the packing away of the hæmoglobin into these formed elements. It may be partly due to the necessity of retaining the hæmoglobin molecule, which is comparatively small, inside the blood-vessels; were it not inside the corpuscle, it might diffuse freely from the plasma into the lymph and from the lymph into the tissues, and so its usual respiratory function would be wasted. It may be to save it from excretion by the kidneys, though, indeed, this end might have been achieved by making the kidneys impermeable to hæmoglobin, as they are in animals in which that substance is free in the plasma. The most important reason, however, is probably to enable this sensitive respiratory substance to be subjected to one set of conditions, while the plasma—and the tissues which it bathes—are subjected to another and more appropriate set. The physico-chemical conditions obtaining in the plasma may be appreciably, possibly widely, different from those inside the red corpuscle. By such means the body is provided, so to speak, with another degree of freedom. It may be able, as an adjustment or an acclimatisation, to change the conditions affecting the hæmoglobin without altering those obtaining in the plasma and in the lymph throughout the body.

THE COMBINATIONS OF HÆMOGLOBIN.

The hæmoglobin molecule contains an atom of iron. In its combination with oxygen the maximum amount of that gas with which it can combine is the chemical equivalent of the iron in the molecule. The ultimate unit of hæmoglobin appears to have a molecular weight of about 16,700; it is comparatively small therefore, the colloid molecule sharing many of the properties of crystalloids, being capable of crystallisation and obeying the laws of chemical mass action. It may combine also with carbon monoxide, a matter of great practical importance, since nearly all the deaths which occur in coal-mining are due to poisoning caused by the high affinity of CO for hæmoglobin. The CO-combination appears to be exactly of the same nature as that of oxygen. Hæmoglobin combines also with nitric oxide (NO), but that reaction has been little investigated owing to technical difficulties. The combinations of oxygen and carbon monoxide with hæmoglobin are reversible ones. At a low pressure only a small amount is taken up, at very low pressures practically none, at higher pressures, however, the hæmoglobin becomes fully saturated with the gas. If the pressure be reduced the gas originally combined will be again released. The important characteristics of these combinations can be shown in a curve which is known as the "dissociation curve." The degree of saturation of hæmoglobin is plotted vertically against the pressure of the gas horizontally (Fig. 1). The idea is simple but the technique difficult; it requires experience before accuracy can be attained. It is necessary first to expose the solution of hæmoglobin in a so-called "tonometer" or "saturator" to any required pressure of the gas, which must be analysed afterwards to ensure that it is finally of the expected composition. It must be revolved for some time under defined conditions of temperature in order to allow it fully to attain an equilibrium. The solution containing the gas in combination must then be removed and placed in a blood-gas apparatus of the type designed by Barcroft, Haldane, or Van Slyke. In this way the degree of saturation, or rather the degree of unsaturation, of hæmoglobin may be measured. Allowance must then be made for the gas dissolved in physical solution. So investigated, a dilute solution of hæmoglobin, or a strong solution very carefully dialysed to free it from salts, and adjusted to the right hydrogen-ion concentration, gives a dissociation curve which appears to be a rectangular hyperbola governed by a simple chemical equation. The presence, however, of salts in a strong solution, such as occurs inside the red blood corpuscle, was shown by Barcroft and his colleagues in a series of very fundamental observations some 15 years ago, very considerably to affect the shape of the curve, turning it from the simple hyperbolic type to one possessing an S-shape. It is a very fortunate thing for the body that the actual dissociation curve of blood is of the latter form and not of the former. Respiration would have been difficult had the blood possessed the properties of a dialysed solution of hæmoglobin. Owing to the S-shape, it is possible for the blood to take in its oxygen and to be fully saturated at not too great a pressure, and yet to give it off again at a pressure not so much less. The supply of oxygen to the tissues, from the blood in the capillaries, depends upon diffusion and requires, therefore, a comparatively large pressure—i.e., a concentration of the gas in order to drive it along. If the gas could be released from the hæmoglobin only at a very low pressure, as is the case with dialysed hæmoglobin, the removal by the tissues of a large fraction of the oxygen contained in the blood would be difficult or impossible. As it is, a high degree of utilisation of the oxygen contained in blood is rendered possible by the shape of the curve.

MOLECULAR CONSTITUTION OF HÆMOGLOBIN.

From the physico-chemical standpoint the change in shape produced in a strong solution by the presence of salts appears to be due to an aggregation, or a polymerisation of the hæmoglobin molecule, or to some other cause reducing what may be called its thermodynamic "activity." In a concentrated dialysed solution, or, as Hartridge and Roughton have recently shown, in a dilute solution undialysed, the reaction appears to follow the chemical equation,

$Hb + O_2 \rightleftarrows HbO_2$ (unaggregated molecules).

In concentrated solution, however, in the presence of salts, the molecules appear to be aggregated, and the chemical equation to be,

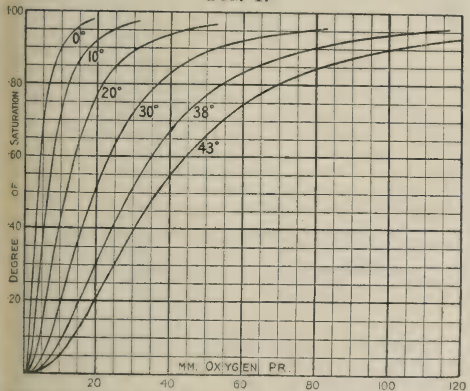
$Hb_n + nO_2 \rightleftarrows (HbO_2)_n$ (aggregated molecules).

The fundamental unit, therefore, of hæmoglobin, as it exists inside a red blood corpuscle, seems to be Hb_n containing n atoms of iron and combining with n molecules of oxygen. The quantity n seems to be an average number representing the average degree of aggregation of the molecule. Most of the molecules are present as Hb_2, a minority as Hb_3.

FACTORS AFFECTING DISSOCIATION CURVE.

The dissociation curve is affected by various factors. A rise of temperature, both in the case of dialysed hæmoglobin and in that of whole blood, produces a large fall in the affinity of the pigment for the gas. This is a thermodynamic consequence of the fact that hæmoglobin combines with oxygen with an evolution of heat. It is of importance in the body, since the highest temperature of the blood occurs in the most active tissues which need the oxygen most, and the high temperature helps to drive the oxygen out. The dissociation curve is affected also by a change in the hydrogen-ion concentration, whether produced by the presence of CO_2 or by the addition of acid—e.g., of lactic acid from the muscles—to the blood. The effect of CO_2 in diminishing the affinity of hæmoglobin is a large one and exactly similar to that produced by a rise of temperature: it is of importance both in the tissues and in the lungs, since the increased pressure of CO_2 in the capillaries of an active muscle helps to drive the oxygen out to the cells where it is wanted, whereas the diminished CO_2 in the lungs helps to allow oxygen to come in. The effect of fixed acid on the dissociation curve is important in connexion, both with asphyxia as was shown by Barcroft, and also with muscular exercise. The addition of 0·08 per cent. of lactic acid to blood, or even of 0·04 per cent., causes an extensive change in the form of the curve, a shift to the right (Fig. 1) similar to the shift produced by a rise of 5° C. Barcroft has shown that moderate exercise, such as walking up a mountain, may produce similar effects, which he attributed to the acid liberated by the muscles appearing in the blood. When it is remembered that severe muscular exercise may cause the appearance in the blood of as much as 170 mgm. of lactic acid in every 100 c.cm.—i.e., of 0·17 per cent.—it will be realised how extensive are the changes in the respiratory function of hæmoglobin which may be caused in this way. During severe muscular fatigue the blood, as a consequence of this effect of acid, may become more unsaturated as it passes through the capillaries, may have considerably more oxygen taken out of it at a given pressure than under normal circumstances—a fact for which the active muscles may well be grateful.

FIG. 1.



Dissociation curves of human blood, at different temperatures, and exposed to a CO_2 concentration which would have given a pressure of 40 mm. at 38° C. Calculated for $n = 2{\cdot}2$, $K_{38} = 0{\cdot}00060$, $q = 19000$ cals. (Plotted in terms of oxygen pressures at the actual temperatures involved, instead of in concentrations of oxygen.)

FIG. 2.

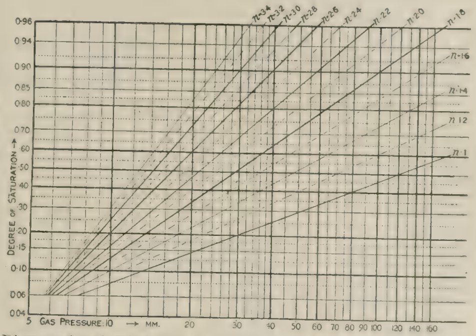


Diagram for plotting dissociation curves. Vertically log $y/(1-y)$ horizontally log x. If the observations obey the equation $y/(1-y) = Kx^n$, the points will lie on a straight line; the slope gives the value of n, which may be read directly on the diagram. A change in K only moves the line parallel to itself.

The equation of the dissociation curve, which may be deduced from the chemical formulæ given above, is $\frac{y}{1-y} = Kx^n$, with only two constants, K and n. Fortunately for the physico-chemical theory of the combination, the effect both of temperature and of a change in hydrogen-ion concentration appears to be directed at K only and not at n. K is largely diminished by a rise of temperature or of hydrogen-ion concentration, while n remains unaltered. This makes it possible to adopt a very simple form of dissociation curve, in which log $\frac{y}{1-y}$ is plotted vertically, and log x horizontally. The resulting dissociation curve thus becomes a straight line, which may be drawn with a ruler if two points upon it be known (Fig. 2); a change of temperature, or of hydrogen-ion concentration, merely moves this line backwards or forwards, parallel to itself, without changing its slope. This method of plotting dissociation curves, though it tells us nothing physically about the nature of the reactions, is a great help in the rapid drawing and interpolation of dissociation curves, and in demonstrating the effects of the two chief factors which change them. From the slope of the line the value of n may be read off.

This effect of acid on the dissociation curve is not confined to the case of oxygen. As Haldane and his colleagues have shown, CO_2 has an exactly similar effect upon the dissociation curves for carbon monoxide; on the distribution curves, however, of hæmoglobin between CO and O_2, acids and CO_2 have no effect. This may seem at first sight paradoxical, but when we remember that acid has the same effect on the CO dissociation curve as it has on the O_2 dissociation curve the result becomes obvious. There is no reason why it should work one way more than the other when both gases are present.

An explanation of why acid has this most important effect on the affinity of hæmoglobin for oxygen, or CO, has long been lacking. Recent work, however, has provided a tolerably certain one. Hæmoglobin, as it occurs in blood, is an electrolyte, a weak polyvalent acid. We may regard it therefore as dissociating according to the scheme:

$$H(Hb)_n \rightleftarrows H^{\cdot} + (Hb)'_n$$

in which the ion $(Hb)'_n$ has a very much greater affinity for the gas than has the molecule $H(Hb)_n$. Raising the hydrogen-ion concentration, therefore, tends, according to the laws of mass action, to depress the dissociation, to force the reaction to the left, to cause the formation of the undissociated molecule from the ions, and hence to produce a body having a smaller affinity for the gas. Raising the hydrogen-ion concentration, therefore, causes the hæmoglobin to give up its oxygen, raises the oxygen pressure. This process occurs in the capillaries; acid and CO_2 pass into the blood and help to drive the oxygen to the active cells which want it. Conversely, it is inevitable that raising the oxygen pressure should raise the hydrogen-ion concentration of blood. This effect has been shown directly by Parsons and more recently by Brown, indirectly—but equally certainly—by some observations of Haldane, of which I shall speak later.

METHOD OF CONVEYANCE OF ACID AND CO_2 BY BLOOD.

We will turn now to the question of how acid and CO_2 are carried by blood. It has long been disputed whether, on the one hand, CO_2 combines directly with hæmoglobin, either (1) as oxygen does, or (2) to form hæmoglobin carbonate or bicarbonate,

$$(1)\ Hb + CO_2 \rightleftarrows HbCO_2,\ \text{or}$$

$$(2)\ HbOH + H_2CO_3 \rightleftarrows HbHCO_3 + H_2O;$$

or whether, on the other hand, it is carried as bicarbonate by alkali released by the hæmoglobin or other weak acids in the blood,

$$NaHb + H_2CO_3 \longrightarrow NaHCO_3 + HHb.$$

It has been shown by Barcroft that the effect of CO_2 on the dissociation curve is precisely equal to that of the change in hydrogen-ion concentration which it produces. There is nothing left, therefore, for any specific effect: *CO_2 produces its change on the dissociation curve merely by its action as an acid* and in no other way. Conversely, therefore, hæmoglobin must deal with CO_2 as it would with an acid, not by any specific reaction such as that with oxygen and carbon monoxide. It is known, moreover, that in the ordinary range of CO_2 pressures there are no specific absorption bands corresponding to a direct compound of carbon dioxide and hæmoglobin. There would seem, therefore, to be only two possible ways in which the CO_2 could be dealt with: either the formation of sodium bicarbonate by means of sodium released by hæmoglobin, or the direct formation of hæmoglobin bicarbonate. The fact that CO_2 under all ordinary conditions is present simply as bicarbonate is shown, moreover, by the accuracy of the method of calculating the hydrogen-ion concentration by means of L. J. Henderson's equation,

$$cH = k.pCO_2/vCO_2.$$

If the term vCO_2 contained a large proportion present in some form other than bicarbonate, then the method would necessarily go astray; it is widely employed, however, and no serious discrepancies are found. Now an easy way of deciding whether the hæmoglobin combines with CO_2 directly, or liberates sodium to combine with it, is provided by the *determination of the sign of the electric charge on the hæmoglobin ion.* A recent, hitherto unpublished, research by H. Taylor has shown beyond question by electrometric methods that the hæmoglobin is there as an anion, carrying a total negative charge adequate to account for all the CO_2 which blood is capable of taking up. There is no doubt, therefore, that under ordinary circumstances hæmoglobin is present as the sodium or potassium salt of an acid —e.g., as Na_3Hb, an alkaline salt capable, like the salts of other weak acids, of acting as a "buffer," that is, of giving up its alkali to neutralise other and stronger acids. Such reactions as the following would occur:—

$$Na_3Hb + HX \longrightarrow Na_2HHb + NaX$$

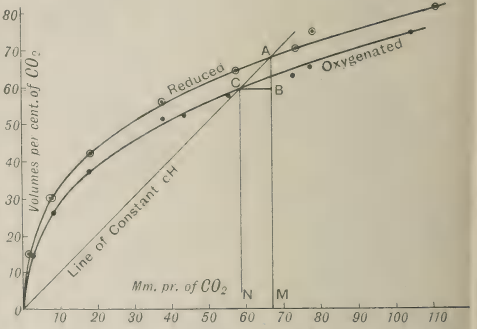
$$Na_2HHb + HX \longrightarrow NaH_2Hb + NaX.$$

Had there been hæmoglobin bicarbonate present, then the hæmoglobin would necessarily have had a *positive* electric charge; this is quite definitely not the case. As the CO_2 pressure is increased, the total charge on the hæmoglobin diminishes—as it should if the latter be present as an anion—and indeed by adding acid may be made to disappear altogether and become positive, though small, on the opposite side of the iso-electric point. This point, however, occurs well outside the range possessing any practical physiological significance. Such considerations show that CO_2 not only *may* be carried but *must* be carried in the manner indicated. One could wish that the certainty of these facts would induce people, who still hold the contrary view, to spend their time in the discussion of something more profitable.

IMPORTANCE OF CO_2 DISSOCIATION CURVE.

The CO_2 dissociation curve is of considerable importance (Fig. 3). It differs from the oxygen dissociation curve; it has no S-shape at the beginning; it does not approach a maximum, but continues to rise as the CO_2 pressure is increased. One of the most important—the most astonishing, the most intriguing—observations in connexion with the CO_2 dissociation curve was that made by Christiansen, Douglas, and Haldane on the effect of oxygen upon it. The combination of hæmoglobin with oxygen diminishes the amount of CO_2 with which the blood can combine! The explanation of this appears to be as follows. The hæmoglobin molecule is a very large one, with a number of groups on it capable of releasing a hydrogen ion and acting as an acid. At one particular group in the immediate neighbourhood of the iron atom very special conditions obtain, and when the iron combines with oxygen, as it probably does when that gas is taken up by hæmoglobin, the acid dissociation constant of the local hydrogen ion is very considerably increased. What was previously such a weak acid that it remained almost completely undissociated, has now become such a strong one that it becomes almost

FIG. 3.



CO_2 dissociation curves of oxygenated and reduced human blood (J. S. H.). Christiansen, Douglas, and Haldane, 1914.

completely dissociated and requires sodium to neutralise it. Consequently less sodium is available for the neutralisation of acids or CO_2, hence less CO_2 is capable of combining with the blood when oxygen has been taken up. This effect, which Haldane and his colleagues observed in 1914, is, as a matter of fact, a necessary consequence, from the physical standpoint, of the converse effect of CO_2 on the dissociation curves of blood. It is amusing to reflect that a phenomenon which could have been predicted from other well-known experimental facts had to wait for its discovery by actual experiment; it is strange how often one begins to predict only after the event! This effect of oxygen in changing the affinity of blood for CO_2 is of importance in the capillaries and lungs, in both of which it aids the transport of CO_2. It can scarcely be called an adaptation, for it deals with a definite inadaptable chemical property; it is a striking example, however, of the way in which the body is apt to find and utilise chemical reactions which seem so admirably to suit its purposes.

METHOD OF RETENTION OF HÆMOGLOBIN IN RED CELLS.

Hæmoglobin is retained inside the walls of the corpuscle by the presence of an impermeable membrane; so also are $Na^{\bullet}$, $K^{\bullet}$, and phosphate ions, but not $H^{\bullet}$ or Cl'. The wall of the corpuscle is very thin and elastic. Probably the total osmotic pressure inside it is equal to that outside. When the plasma has water or any chemical body added to it, the corpuscle swells or shrinks, so as to maintain an equality of osmotic pressure. The osmotic pressure of hæmoglobin is not inconsiderable and is probably balanced by the difference in the pressures of other indiffusible bodies, such as $Na^{\bullet}$, $K^{\bullet}$, and PO_4. By special methods it is possible to destroy the impermeability to $Na^{\bullet}$ and $K^{\bullet}$ while leaving that to Hb. If the boundary of the corpuscle be permeable to all salts, but not to hæmoglobin, the osmotic pressure of the latter necessarily causes the corpuscle to swell up. During the dialysis of blood corpuscles, without previous laking, this phenomenon was discovered by Barcroft, who found that the corpuscles swelled up into contact with one another, appearing to be a homogeneous solution, but becoming cloudy at once, as Brown showed later, by the addition of salts. The effect of adding salts is only temporary, and disappears as the salts distribute themselves evenly inside and outside the now permeable corpuscles; the latter then swell again under the osmotic pressure of the hæmoglobin inside. This experiment may be repeated again and again, the cloudiness appearing and then disappearing each time the salt is added. Another explanation of the phenomenon has been given by Brinkman, an explanation, however, requiring some credulity. It is supposed that the hæmoglobin in such cases is really outside in the solution, but that on the addition of salts it returns, by some process of adsorption or otherwise, to the inside of the corpuscle. A rough calculation, however, shows that if the hæmoglobin were distributed only on the surface of the corpuscle, it would form, not a monomolecular layer, but one about 100 molecules thick. It is difficult to see how it could hold on! Other explanations of the phenomenon than that advanced by Brinkman would seem more plausible.

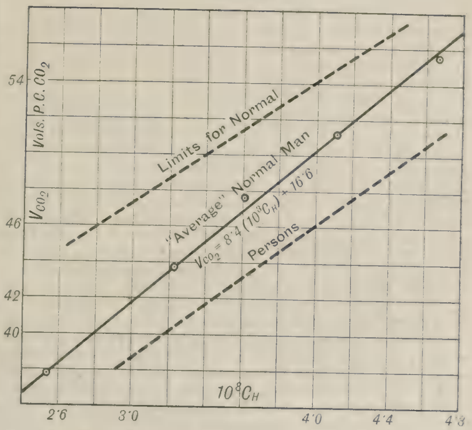
Bürker has described an interesting relation between the linear dimensions of a blood corpuscle and the amount of hæmoglobin which it contains. Over a wide range of animals the amount of hæmoglobin per corpuscle is apparently proportional to the surface of the latter. This also suggests, at first, that the hæmoglobin is connected with, or carried by, the surface of the cell. The amount, however, of hæmoglobin would seem to prohibit this explanation, since it is difficult to conceive adsorption, or any other physical process, to go on through a layer 100 molecules deep. It is far more likely, as L. E. Bayliss has suggested, that Bürker's relation depends upon the fact that the thickness of all the corpuscles is about the same, in which case their content of hæmoglobin would naturally be proportional to their area.

At the surface of the corpuscle there exists what is known as a Donnan membrane equilibrium. The presence in the corpuscle of charged ions, incapable of passing through its walls, produces a difference of electrical potential across its surface and a difference of concentration on its two sides of ions otherwise able freely to diffuse. This is not the occasion to discuss this membrane equilibrium, but it would seem certain that the differences which are known to exist, and the transformations which are known to occur, between the inside and the outside of the blood corpuscle, are due largely to the existence of this Donnan equilibrium.

"BUFFER" PROPERTY OF HÆMOGLOBIN.

The property possessed by hæmoglobin of acting as a weak acid which, in combination with alkali, is a very potent "buffer," explains the capacity of blood for holding—for neutralising—relatively large quantities of acid, without a serious rise of the hydrogen-ion concentration. Recent work by Barcroft and his colleagues has defined the relations which exist, in the blood of the average normal man, between the hydrogen-ion concentration and the CO_2 pressure on the one hand, and between the volume of CO_2 carried by the blood and the hydrogen-ion concentration on the other (Fig. 4). The steepness of the line, in the latter case, relating the volume of CO_2 carried in the blood to the hydrogen-ion concentration, is *a measure of the efficiency with which the blood is buffered;* the position of the line depends upon the amount of bicarbonate in the blood and may be altered by artificial means. Its slope, however, depends mainly upon the amount of hæmoglobin present in the blood; it will be less in the case of anæmic persons, more in that of persons acclimatised to high altitudes, with a high hæmoglobin content.

FIG. 4.



Normal human blood cH varied by varying CO_2 pressure. Relation between vCO_2 and cH. The heavy line, which is exactly straight, denotes the relation for the "average" normal man, the broken lines enclose the relations for eight normal persons. The steepness of the straight line is a measure of the efficiency of "buffering," and is determined mainly by the amount of hæmoglobin in the blood. Barcroft, Bock, &c., 1922.

TYPES OF HÆMOGLOBIN.

It has long been discussed whether all types of hæmoglobin are the same, or whether different animals each possess their own characteristic pigment. It was known, of course, that crystallographically the hæmoglobins of different animals were different: this, however, might be due merely to the specific globin portions of the molecules, and not be associated with any very striking physical or chemical differences. Recent work by Barcroft on the blood of a marine worm, *Arenicola*, has shown quite definitely that, both in its physical and its chemical properties, that animal, at any rate, possesses its own specific hæmoglobin. Barcroft's work was carried out with a wonderful little instrument, the Hartridge reversion spectroscope, which is becoming of more and more value in the study of the behaviour of hæmoglobin and blood. The principle of this instrument is not unlike that of the Barr and Stroud range-finder, in which two images are placed, one above the other, and a coincidence is obtained by the observer between corresponding lines or points. In the Hartridge instrument two spectra are placed, one above the other, one of them being reversed, and coincidence is obtained by placing two absorption bands in line. This method enables far greater accuracy to be attained than by the usual method, in the measurement of the wave-length of an absorption band, and has been adapted for determining the dissociation curves of dilute solutions of hæmoglobin, both with oxygen and CO. Employing Hartridge's instrument Barcroft found that the α-absorption-band of hæmoglobin from *Arenicola* is in quite a different place from that of human hæmoglobin, and—even more striking—that the distance between the CO α-band and the oxygen α-band is also very different. Correlated with these shifts in the α-band is a large change in affinity. The blood of *Arenicola* has an enormously greater affinity for oxygen, and a greater affinity for carbon monoxide, the latter, however, being increased nothing like so much as the former. Furthermore, Barcroft found that if we vary the animal, or the temperature, or the gas with which the hæmoglobin is combined, then under all conditions there is a linear relation between the affinity and the wave-length of the resulting α-band. Clearly there is something of a very fundamental physical character behind these observations. In any case, Barcroft has answered without question the long-debated problem of whether all types of hæmoglobin are the same, and has shown, moreover, the extraordinarily low pressures at which, in *Arenicola*, oxygen dissociation can take place. An animal which can utilise oxygen, which can reduce its hæmoglobin at these very low pressures, must have an amazingly effective oxidative mechanism.

Effect of CO on Capacity of Hæmoglobin for Oxygen.

There is one curious and paradoxical observation, which is the last that I will discuss. If blood be brought in contact with a mixture of CO and O_2, and the pressure of the CO be varied from a finite value towards zero, then the degree of saturation of the hæmoglobin with oxygen will change; it will rise at first as the CO pressure is diminished, and will fall again as the CO pressure becomes very low and ultimately vanishes. It would have seemed at first sight almost inevitable that, as the CO pressure fell, the amount of oxygen taken up would rise continuously; CO turns out O_2, its removal should allow more O_2 to combine. There is a physico-chemical explanation of why the apparently common-sense view is wrong. We might—after the event—have predicted that the oxygen concentration would fall again. Douglas, Haldane, and Haldane, in any case, established the experimental fact, which explains an earlier observation by Haldane and Lorrain Smith—viz., that the condition of mice exposed to a very low pressure of oxygen did not deteriorate, but actually improved, on the admission of a small amount of carbon monoxide into the chamber in which they were! It would seem possible—though perhaps unlikely—that the breathing of a small amount of carbon monoxide might be of assistance in this way in aiding mountain-climbers suffering from oxygen-want at extreme heights.

Directions of Future Research.

Hæmoglobin is one of the most interesting substances in the world. Many views are possible about it, and some of these views I have expressed here. Others you will find in books, particularly in Bayliss's "Principles of General Physiology." In 1919 Mr. Barcroft and I persuaded Sir William Bayliss to come to Cambridge to discuss with us, and with Dr. Hartridge, the problems of hæmoglobin. After our discussion I remember jestingly remarking that we ought to found a "Hæmoglobin Club"; Sir William Bayliss took the suggestion seriously, approached the Medical Research Council, and the "Hæmoglobin Committee" was formed. Much work has since been done; we have written, with great labour, and with many searchings of heart, a pamphlet on the reaction of the blood. Some of the most beautiful work of recent times, of a physico-chemical character, has been achieved by Hartridge and Roughton at Cambridge, on the chemical dynamics of hæmoglobin; my colleague Brown has established the validity of thermodynamic reasoning and chemical equations applied to the reactions of hæmoglobin. There is still, however, much to be done; one would like to know why the reaction between hæmoglobin, oxygen, and carbon monoxide is affected by light, the reason why the ion of hæmoglobin has so much greater an affinity for oxygen than has the molecule, the exact nature of the corpuscular envelope, and the origin of the equilibria which take place at its boundary. One would be glad to discover the chemical nature of hæmoglobin, and its manner of synthesis in the body. We know still very little, but we know enough to be quite sure that we are on the right lines in regarding the red blood corpuscle as a physico-chemical problem, and in investigating it by physico-chemical means.

THE POSOLOGY OF BEVERAGES

AS DETERMINED BY THE FRACTIONAL-DIURESIS TEST.

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In certain patients it is necessary to know what becomes of liquids ingested by them and traversing a more or less abnormal organism. It is important to learn how the water intake is absorbed, diffused throughout the tissues and body-fluids, and, finally, how it is eliminated by the kidneys. Such knowledge of the course of water within the organism, especially important in cardiac, renal, and cardiorenal cases, is indispensable in view of the following objects: (1) exact regulation of the quantity of beverages employed; (2) logical distribution of their intake throughout the 24 hours; (3) indication of the conditions under which the absorption, diffusion, and elimination of water may be most perfect.

The term "beverages" should include all liquids received by the organism. In considering the total water intake, the water present in various foods must be included, since it constitutes an important part of the daily ration of water supplied to the organism. For present purposes, however, the following discussion refers to the water present in beverages.

Huchard and Fiessinger long ago pointed out the necessity for restricting beverages in asystolic patients. Widal has insisted that physicians should continually interest themselves in the quantity of liquids to be prescribed in cases of nephritis and in the regulation of food and drink according to given indications and particular cases. No method for such regulation has been hitherto available. In a case of Bright's disease, the permeability of the kidney must be known not only for urea and chlorides, but also for water. Whoever undertakes the management of Bright's disease must be familiar with these three factors. In ascertaining the general renal permeability it is a mistake to depend upon any single method, such as the phenolsulphonephthalein test or the method of induced polyuria. The permeability for various substances must be determined, as Widal has clearly shown.

The fractional-diuresis test indicates the permeability for water. And, on account of the discrimination which it requires between renal and extra-renal factors, it supplies information concerning general disturbances in the water-content of the organism and permits recognition of causes and the regulation of beverages according to the pathogeny present. As with all tests based upon induced polyuria, the fractional-diuresis test includes a certain number of essentials. However, the latter have been reduced to the minimum compatible with the object in view. The test is essentially clinical and practical.

Description of Method.

The test must be made under four essential conditions: 1. With the stomach empty, because, after meals, the urinary elimination is normally retarded on account of portal hypertension accompanying digestion (this retardation constitutes true digestive opsiuria). 2. With the chlorides in equilibrium, since variations in the quantity of absorbed chlorides produce variations in the quantity of water eliminated. In practice, determination of chloride equilibrium is exceedingly simple, the only essential being to maintain a uniform chloride intake for at least two days (this necessity is simplified still further because cases dealt with are usually cardiac or renal, and ordinarily placed on a chloride-free regimen). 3. The test must be made twice, a one-day interval being preferably allowed. During the first test, the patient being erect, reclining during the second test. 4. The diurnal and nocturnal urine should be determined in certain cases, in which nycturia, continuing into the morning hours, may invalidate a test already begun, and the presence of nycturia is thus readily revealed.

Technique.

The bladder is first completely voided, the urine being rejected. With the patient erect or reclining, according to the order selected for the test, four portions of water, each of 200 g., are swallowed, at half-hour intervals. Following reception of the first portion, and until three half hours elapse after the last portion is swallowed, the patient urinates every half hour into a graduated receptacle, noting the quantity voided on each occasion. It is sometimes well to relieve the patient of responsibility by providing a series of six suitable graduates, into which the patient urinates successively, beginning at the left. The urinary elimination curve, showing the appearance, degree, retardation, and cessation of polyuria, may thus be noted at a glance. It is best always to note precisely the several quantities of urine collected.

Results Obtained.

Following the intake of 800 g. water, as described, induced polyuria normally occupies a period of six half hours. The first and sixth fractions of urine are about 35 c.cm. each, return to this quantity showing termination of the test. The normal sequence is shown as follows :—

Time (A.M.)	Grammes water taken.	Grammes urine collected.
7.0	200	—
7.30	200	35
8.0	200	60
8.30	200	180
9.0	—	300
9.30	—	220
10.0	—	35
	800	830

The quantity thus collected first should be about 35 or 45 c.cm. A larger quantity suggests nycturia, prolonged into the morning. If nycturia seem present the total 24-hour excretion should be collected in two periods on the following day. The diurnal urine is collected from 9 A.M. to 9 P.M., the patient remaining erect, either sitting or standing. The nocturnal urine is voided from 9 P.M. to 9 A.M., the patient reclining. Inversion of the normal quantity of urine voided diurnally and nocturnally shows the presence of nycturia. Normally, the diurnal urine constitutes about two-thirds the total 24-hour quantity.

The last quantity collected may be larger than the first. If it be about 60 to 70 c.cm. the test is incomplete and should be continued for another half hour. Such prolongation only shows still more clearly a delay in elimination already indicated by the quantities of urine previously collected. The clinostatic results should be compared with the orthostatic results, since such comparison permits diagnosis of atypical elimination and indicates the intake of liquid which may be desirable for each particular case, whose needs are shown by the test.

The test indicates three main groups of conditions, more or less closely approximated in various cases. The table indicates the three possibilities. It is well to emphasise again, at this point, the great importance of distinguishing nycturia and its effects on the test from induced polyuria of high degree. Error of this kind seriously affects the results.

Group.	Position.	Urine passed.	Interpretation.	
1	O C	Equal and normal.	No disturbance, renal or extra-renal.	
2	O C	Diminished Increased.	Cardio-vascular affections.	
3	O C	Equal and abnormal.	Disturbed water absorption	Stomach. Intestine. Liver.
			Disturbed water diffusion	Membrane permeability altered. Humoral disturbance, especially chloride-retention.
			Renal disturbance.	

O = orthostatic. C = clinostatic tests.
The term "equal" means approximately equal only.

In group 3 the test does not indicate the nature of the lesion producing defective elimination of water by the kidney, but shows that a lesion requiring diagnosis by the usual methods is present. Let us examine each of the three groups in detail.

Group 1.—Elimination is identical and normal, orthostatically or clinostatically. The absorption, diffusion, and elimination of water may therefore be considered unaffected, and renal and extra-renal conditions may be regarded as normal.

Group 2.—Clinostatic is better than orthostatic elimination. Cardiovascular disturbances, impeding the circulation of water within the organism, may be assumed to be present. Linossier and Lemoine have shown that orthostatic oliguria is caused by circulatory disturbances, the cardiovascular apparatus being defective while the secretory capacity of the kidney may be normal. Conditions in Group 2 must be closely scrutinised. If the orthostatic is less than the clinostatic elimination, the latter being normal, the cardiovascular affection present is of simple nature. For example, take the following elimination scheme :—

O	35	55	90	200	175	85
C	35	60	180	300	220	35

In this case estimation may be made by subtraction, the influence of cardiovascular factors in the urinary-water anomalies may be noted, functional cardiovascular disorder may be assumed, and cardiac insufficiency may be suggested, as Merklen has remarked.

If clinostatic elimination is abnormal, affections besides the cardiovascular disturbances exist. The combination is indicated as follows :—

O	35	55	90	200	175	85
C	35	55	120	230	180	70

Here the exact influence of the cardiovascular factors present cannot be determined by the scheme, because aggravating factors are superadded. We may now consider Group 3.

Group 3.—Orthostatic and clinostatic elimination are practically equal, and cardiovascular affections may be excluded. However, the elimination is abnormal in both positions. The abnormality may be due to failure of the water to reach the kidneys normally, or to defective renal secretion, renal impermeability to water permitting the latter to reach the kidneys normally without being fully eliminated.

These different factors may be duly distinguished by systematic clinical examination. It should first be determined whether water reaches the kidneys normally.

(*a*) Gastric evacuation may be delayed. Normally, 200 g. water, received by the empty stomach, remain there for five to six minutes. Longer delay is due to retarded evacuation, most commonly on account of gastric dilatation. Here water may remain in the stomach for five or six hours after ingestion, the fractional-diuresis test naturally showing considerable delay in diuresis. The kidneys behave as if no water had been swallowed. In certain cases, as shown by Surmont and Tiprez, the diuresis test may permit diagnosis of pyloric stenosis.

(*b*) Gastric evacuation being normal, intestinal absorption may be retarded. Intestinal absorption is especially governed by the portal tension. Increased portal tension delays absorption. Gilbert, Lereboullet, and Villaret have shown that hepatic affections rapidly produce portal hypertension through intrahepatic circulatory obstruction. Opsiuria occurring in such cases constitutes an early sign of hepatic alteration.

In intestinal affections, and especially diarrhœa, water is evacuated with the stools. In retarded elimination due to intestinal conditions, the kidneys are not affected. If anomalies in diuresis are not explained by supplementary renal examinations referring to albuminuria, azotemia, and the blood chlorides, clinical examination of the stomach, intestine, and liver is indicated.

(*c*) In the presence of a normal digestive tract, diffusion of water within the organism may be altered. After normal absorption by the digestive tract, water may not normally circulate within the organism if affected by the following factors: (1) alterations of the tissues rendering them more or less impermeable and resulting in obstruction, in various membranes, to the free passage of water; (2) humoral disturbances. The movements of water within the organism are determined by normal or pathological variations in humoral equilibrium. Working with Labbé, and basing our conclusions upon the numerous modern studies on colloids, lipoids, mineral substances, and hydrogen-ion concentration, we have believed it possible to indicate four equilibria of especial importance in the hydric exchanges. These four equilibria are osmotic, acido-basic, lipocytic, and mineral.

Retention or displacement of the circulating water may follow disturbance of one or more of these equilibric factors. Sodium chloride being the agent which practically predominates in hydric regulation, affections of the latter are reducible, in the last analysis, to retention of water produced through chlorides. Diuresis is therefore affected in such states. Altered diuresis, however, is not a guide to renal impermeability for water, which may be retained solely through the action of chlorides. Before œdema becomes apparent and clinically evident by pitting on pressure, as much as 5 to 6 litres of water may be retained within the tissues. If chloride retention of water be suspected, the serial test devised by Pasteur Vallery-Radot, and consisting in the ingestion of quantities of salt with successive weighing of the patient, should be utilised.

Functional Elasticity and Functional Capacity.

If complete clinical examination fully eliminates all but renal factors in the altered diuresis observed, the latter may be considered due to renal impermeability for water. In such cases, and from the viewpoint of aqueous diuresis, two conditions may be considered which I will term, respectively, functional elasticity and functional capacity of the kidney. Functional elasticity is the ability of the kidney to respond to the excretory requirements of the organism. Functional capacity corresponds to the maximal excretory ability of the kidney.

A normal kidney has great functional elasticity, responding readily to the excretory variations physiologically required of it. A diseased kidney, on the other hand, as Albarran has shown, tends to excrete a uniform quantity regardless of conditions present. The importance of knowing whether functional elasticity of the kidney really exists, and of exactly determining its degree and power of accommodation, may be readily understood. The fractional-diuresis test supplies information on this essential point, upon which depend the indications for restricting beverages in Bright's disease (without œdema).

In order to illuminate the discussion, we offer three analytical statements, obtained clinostatically, and showing retarded elimination assigned to the kidneys only, making the critical examination described above. The three outlines show progressively diminishing functional elasticity and eliminative retardation which is rendered still greater by diminution in functional capacity.

(*a*) C.cm. urine collected: 25, 30, 45, 120, 160, 70. The urine contains pus, blood, and traces of albumin. Blood pressure, systolic 17, diastolic 10.

(*b*) C.cm. urine: 15, 18, 65, 125, 80, 25. The urine contains a small quantity (0·16 g.) albumin. Blood-urea, 0·50. Blood pressure, systolic 22, diastolic 15.

(*c*) C.cm. urine: 40, 35, 35, 33, 35, 35. Albumin, 2 g. Blood-urea, 1·5 g. Blood pressure, systolic 28, diastolic 15.

In case (*a*), of 800 c.cm. water ingested, but 450 c.cm. are eliminated within the period fixed for the test. In (*b*) and (*c*) the respective elimination is of 325 and 213 c.cm. But much more important than the total elimination is the diminution in functional elasticity. In case (*a*) the kidneys give no material response before the fourth half hour. Then, under the first maximal influence following ingestion of the total of 800 c.cm. water, they excrete the maximal quantity permitted by their functional capacity, or 160 c.cm. only at the fifth half hour, the usual elimination being almost immediately resumed. The reduction in functional elasticity is clearly evident. The elasticity is not wholly abolished, however, and must be taken into account in arranging the water ration. The latter must not be so rigidly restricted for mere diminution, as it will be for entire loss, of the functional elasticity of the kidney. In case (*b*) the elasticity is still less, a feeble eliminative effort, which is immediately arrested, appearing not earlier than the fourth half hour. In case (*c*) functional elasticity is lost and the kidneys are absolutely incapable of reacting.

Tests should be repeated in order to show the state of the kidneys from time to time. Moreover, exact information as to the renal condition is obtainable only by repeating the tests. The importance of regulating the liquid intake is readily understood. For example, in case (*c*) but 213 of the 800 c.cm. water ingested are excreted in six half hours. The total blood mass is appreciably increased; the blood pressure, already high, is raised still further; headache, due both to urea retention and to high blood pressure, is aggravated, and vertigo occurs frequently. The test shows us that the patient, for the moment, is incapable of eliminating more than an average of 35 c.cm. urine per half hour. The liquid intake, including milk, must be rigidly limited to 35 c.cm. per half hour, whether referring to meals or to other periods, and must include water present in soups and, as far as estimation is possible, in all other foods as well. For a few foods the water content is as follows: Cereals and legumens 10 per cent. to 14 per cent., roots and tubers 75 per cent. to 90 per cent., fruits 85 per cent., bread 30 per cent to 40 per cent., meats 55 per cent. to 75 per cent., milk 75 per cent. to

90 per cent., cheese 35 per cent. to 45 per cent. In the case considered, the total 24-hour urinary elimination and the urinations are much diminished. With such diminution of functional capacity and elasticity urinary excretion cannot be increased, and the case is grave.

In some cases the functional capacity may be high enough to permit excretion of 55 to 80 c.cm. in the absence of functional elasticity. Under such conditions from 70 to 80 c.cm. liquid may be allowed per half hour, and the total 24-hour excretion of urine is readily rendered normal. In most cases functional elasticity exists in some degree, and the most favourable quantity of water allowed must be determined by varying the quantities used in the tests. The most favourable quantity permissible corresponds to the minimum which is followed by maximal elimination. In a word, the dosage of beverages for each particular case may be regulated by an exact knowledge of the factors affecting the elimination of water, and by evaluating the effects assignable to each factor.

Conclusions.

1. In cardiovascular affections beverages should be taken with the patient reclining, and preferably on awaking in the morning and on retiring for the night. As far as possible drinks should be taken in small quantities at a time and not during meals. In a general way beverages should be reduced in proportion to the degree of cardiac insufficiency present, or, in other words, in proportion to the difference between orthostatic and clinostatic elimination.

2. In delayed absorption from the digestive tract, (*a*) gastric dilatation may exist. In this case beverages should be taken only a long time after meals, and in small, divided doses, the patient lying recumbent. If (*b*) intestinal affections, such as profuse diarrhœa, be present, beverages need not be reduced, but should be so prescribed as to bring the total 24-hour quantity of urine as nearly normal as possible. If (*c*) pathological, and especially hepatic, portal hypertension exist, the quantity of liquids which produce most abundant elimination of urine should be determined by making a number of trials. Preferably beverages should not be taken with meals in order not to add physiological hypertension to the portal hypertension already present. Physiological opsiuria may thus be avoided.

3. In humoral disturbances, and especially in retention due to chlorides, the patient should not receive chlorides with the food, and the beverages should be nicely adjusted to the reduced but remarkably uniform elimination commonly present in cases of this kind, at least in fully developed dropsy accompanying nephritis.

4. In purely renal affections the suggestions already given should be followed, especially with reference to functional elasticity and capacity of the kidney.

5. In exceptional and atypical cases, which occur frequently, consideration of the many factors which may be present, with estimation of the importance of each one, should permit suitable regulation of the beverages to meet the needs of the case in hand.

Clinical and Laboratory Notes.

A CASE OF
CONGENITAL CARDIAC MALFORMATION WITH PULMONARY TUBERCULOSIS.

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AND

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THE prolongation of life for 28 years in the case of a patient suffering from grave congenital cardiac defects and the terminal association of this condition with pulmonary tuberculosis would appear to be sufficiently rare to merit record. It is also remarkable that an individual with such cardiac conditions was able to attempt to work—first as a pit-pony lad and later to engage in light labour in a ganister work.

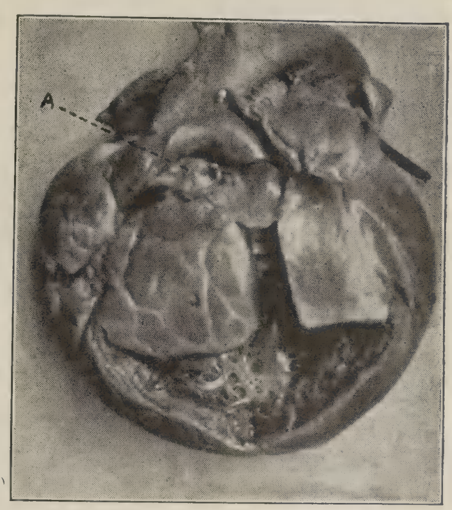
The patient, a male aged 28 years, was admitted to Middleton Sanatorium on Jan. 25th, 1923, on the recommendation of Dr. Samuel Bryson, district tuberculosis officer. The chief symptoms were cough, pain in the chest, dyspnœa, and cyanosis, the evidences of cardiac disease dating from birth and those of pulmonary tuberculosis from June, 1922. Slight hæmoptysis was reported six months before admission, and occasional recurrences. Clubbing of the fingers was present. The face, lips, ears, and fingers displayed the characteristic lividity. There was no marked dyspnœa at rest. On physical examination dullness was found over both lungs with feeble breath sounds and few râles; on each side of the sternum a bulging was evident between the levels of the third and sixth ribs. The area of præcordial dullness showed no extension to the left and there was no thrill. A prolonged blowing systolic murmur was audible, and the second pulmonic sound was noticeably weak. T.B. were present in the sputum, and an examination of the blood showed red cells to be 5,900,000 per c.mm. and white 6250 per c.mm.

Progress of Case.—The patient was confined to bed, and appeared to be fairly comfortable until 7 A.M. on Feb. 7th, when he was found in a state of grave syncope, having risen from bed in spite of prohibition to go to the lavatory, and five hours later a fatal result ensued.

Post-mortem examination revealed the following conditions.

Right lung: Apical adhesions. Marked venous congestion. Cavity of the size of a walnut filled with caseous debris at apex. Scattered tubercles throughout upper lobe and the upper third of lower lobe, the middle lobe being less affected.

FIG. 1.

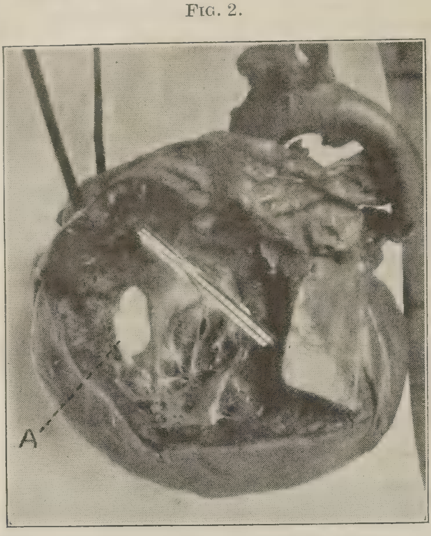


Showing pulmonary artery laid open, giving distal view of diaphragm formed by coalescence of semilunar valves (A), with small calibre opening.

Left lung: Apical adhesions. Marked venous congestion. Cavity at apex similar to that in right lung. Scattered tubercles throughout upper lobe and upper half of lower lobe. Base healthy.

Heart: Right auricle shows a wide patency of the foramen ovale, admitting the index finger with ease, also well-developed Eustachian valve, which is continuous with the valve of Thebesius. The opening of the tricuspid orifice is smaller than usual. Right ventricle shows considerable thickening of its right lateral and posterior wall, which is almost as thick as that of the left ventricle ; anteriorly the wall becomes very thin in the region of the conus arteriosus. The pulmonary valve presents adherent cusps with a central patency which admits only of the passage of a goose-quill, the surface being almost cartilaginous to the touch, and having an eroded appearance in the centre owing to the presence of hard vegetations. Similar calcareous excrescences are present on the ventricular surface of the cusps. The conus arteriosus shows a remarkable elongation and is dilated in the neighbourhood of the pulmonic cusps. The right papillary muscle is large, and projects chordæ tendineæ to the three cusps : the left papillary muscle is represented by a single chordæ tendinea. Posterior to the pedicle of the anterior papillary muscle is an oval opening through the fleshy inter-ventricular septum 3 cm. by 2 cm. in size, situated in its lower third. This channel between the ventricles is sacculated below by the interposition of a fine fibrous curtain coated with endothelium, which forms the lower border of the opening into the left ventricle and limits its extent. The mitral opening is larger than normal. There is a dilatation of the pulmonary artery distal to the adherent pulmonary valves. The ductus arteriosus is not persistent.

FIG. 2.



Showing aperture (A) in ventricular septum viewed through left ventricle.

The striking features of this case are : (1) The marked stenosis of the pulmonary artery through the close adhesion of the semilunar valves ; (2) the occurrence of the rarer warty form of endocarditis affecting the adherent pulmonic valves ; (3) the considerable size of the aperture in the inter-ventricular septum ; and (4) the marked patency of the foramen ovale.

The course of events in the early history of the organ would appear to have been as follows : The occurrence of endocarditis affecting valves of the pulmonary artery about the third or fourth month of fœtal life, when the ventricular septum was well developed but not closed, with consequent adhesion of the valves and obstruction to the blood flow. The over-charged right ventricle would then discharge part of its contents through the patent ventricular partition, and this considerable volume of blood would obviously prevent the normal closure of the septum. Similarly in the case of the inter-auricular septum, whereas at birth the augmented return flow of blood from the lungs normally tends to close the valve-like fold which forms during the fourth month of fœtal life,[1] this counter-pressure would be wanting owing to pulmonary artery obstruction, with the result that the foramen ovale would continue patent. This view is contrary to that expressed in the reference below,[2] but the fact that no developmental errors were found in other parts of the body in the present case lends support to the opinion that the original defect was due to endocarditis.

A CASE OF

STRANGULATION OF THE ILEUM BY AN INFLAMED APPENDIX.

BY IDA M. GUILLAUME, L.R.C.P. & S. EDIN.,
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THIS case is recorded as an example of a rather unusual cause of strangulation of the bowel.

A negro, aged 15, was admitted to Barbados General Hospital under Dr. Gerald Manning on Feb. 21st, 1924, with a history of two days' abdominal pain, chiefly around the umbilicus, and no vomiting. In July, 1923, he had a somewhat similar attack overcome by high enemata, which had no effect this time.

Condition on Admission.—Temp. 98° F., pulse 40, later 60 ; abdominal facies, colicky attacks of pain referred to the umbilicus but no visible peristalsis, and an intensely tender painful tumour on right side, the largest part level with the umbilicus, and moderate abdominal distension. A high enema brought back a coloured result only, and the patient vomited bile four times.

Immediate operation showed that a large loop of greatly distended ileum, two feet long, was strangulated by the appendix looped around it in a tight ring, with the bulbous, swollen, and almost gangrenous tip adherent to its base at the cæcum and containing a fæcal concretion. The apex was freed, appendicectomy performed, the raw surface on the bowel sutured, and the whole returned to the abdomen. Wound healed by first intention.

Probably what occurred was that the long appendix kinked back on itself forming a loop ; the apex became blocked and finally inflamed and then adherent to the base in consequence ; a loop of ileum slipped through the ring so formed and became strangulated.

I am indebted to Dr. Gerald Manning for permission to publish this case.

CONGENITAL BONY OCCLUSION OF THE CHOANÆ.

BY ALBAN EVANS, M.R.C.S. ENG.,
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THE rarity of the condition should make the following case worthy of record.

D. W., male, aged 3 weeks, was brought to the out-patient department with a history of difficulty in breathing. Cyanosis and snuffling noticed soon after birth. Both sides of the nose were full of gelatinous mucus, and on probing a bony diaphragm was found completely blocking the choanæ.

The family history was interesting. Six years previously a baby had been born which survived 15 minutes. A year later came a second, which lived 24 hours. A third arrived the following year which lived for about 36 hours, and which had something wrong with the nose and throat. Two years later came a fourth baby which survived four and a half months, although blue all the time, which was attributed to heart disease.

The bony partition was thoroughly broken down. The baby had to be kept in hospital a month on account of digestive trouble, and when he left he appeared quite well.

LEWES VICTORIA HOSPITAL.—The accounts presented at the annual meeting of the governors of the hospital on May 6th showed a balance overdrawn on Dec. 31st of £169, as against £215 on Dec. 31st, 1922. The report stated that a new and up-to-date X ray apparatus had been installed at a cost of £399, and it was hoped the cost would be met without having to draw upon the invested funds. In 1914, when the system of private in-patients was started, the receipts were £61 ; in 1923 they totalled £275.

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[1] Allbutt's System of Medicine, v., 715.

[2] Ibid., v., 714.

Medical Societies.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at Leeds on April 11th, Prof. E. O. CROFT being in the chair.

Blood Transfusion for Post-partum Hæmorrhage.

Dr. MCGREGOR YOUNG gave a report on blood transfusion for post-partum hæmorrhage at the Leeds Maternity Hospital, in cases where the patients presented all the signs and symptoms of impending death. Intravenous saline and gum solution had been tried without improvement or with relapse; four cases were placenta prævia, one accidental ante-partum, one hydatid mole, one abortion. All recovered; in three cases the improvement was immediate—in four cases after two hours. All were correctly grouped, except in one case on account of extreme urgency, but which did well. All the cases complained during transfusion of præcordial oppression and of fullness in head and neck. There was laboured breathing and cyanosis. On the other hand, no excruciating lumbar pains, no abnormal dropping of the pulse-rate, no high fever, and no hæmaturia followed, these latter being the signs of agglutination and hæmolysis from incorrect grouping. The probability is that the rate of transfusion was too rapid for unfilled veins and the empty right side of the heart, although usually 25 minutes were taken to transfuse a pint. Citrate of soda was used, about 4 ounces of 2 per cent. solution to the pint. A much prompter resort to blood transfusion was advocated where a donor could be found. Most of the disasters were due to delay.

Malposition of the Uterus after Delivery.

Dr. YOUNG also gave a report on 1000 consecutive deliveries examined on the twelfth day after labour at the Leeds Maternity Hospital with a view to malposition of the uterus. Retroversion was found in 50 cases—that is, 5 per cent. No pessary was inserted, nothing was done, and the patients were discharged without remarks. Most of these attended at intervals later. At the end of six months these 50 cases were asked to attend, and 32 came for re-examination. Of these 32 retroversions 30 were found normal and anteverted—that is, 93·7 per cent. —2 only remained retroverted, one from cause not apparent, the other from several fibroids in the posterior wall of the uterus. Cause for the puerperal retroversions was sought, but in 21 cases nothing apparent was found, the puerperium having been perfectly normal. In 6 cases there had been sapræmia of mild type, in 3 cases placenta prævia, and in 2 cases severe post-partum hæmorrhage. This report was thought to be of interest in view of (1) that it is a common routine to insert pessaries for puerperal retroversion in most maternity hospitals; (2) that it is the common teaching in most text-books that such treatment is the correct procedure.

Exhibition of Specimens: Chorion-Epithelioma of the Ovary.

Dr. D. DOUGAL (Manchester) showed a specimen of chorion-epithelioma of the ovary from a patient aged 29. Her first pregnancy terminated at seven months, two and a half years ago, the second at four months in March, 1922. Until Christmas, 1922, she menstruated every 5-6 weeks. A fall, with mild head injury, at Christmas was followed by vaginal bleeding which continued till September, 1923, when abdominal enlargement was first noticed. Amenorrhœa from September, 1923, till her admission to hospital five and a half months later. Pain in the left lower abdomen for several years, became worse with the onset of bleeding. During the present year there had been intermittent vomiting and the abdominal pain had increased in severity, being particularly acute on Feb. 6th and 13th. On admission she was thin and emaciated, her skin had a yellowish tinge; temperature normal; pulse 100; soreness in left lower abdomen. There was a tense, very tender tumour between the pubes and the umbilicus with its centre to the left of the middle line, suggesting a pregnant uterus with concealed hæmorrhage; the cervix was drawn up and pushed forward by an elastic swelling filling the pelvis and continuous with the abdominal swelling; the uterus appeared to be in front and to the right. Total hysterectomy with removal of both appendages was performed on March 1st, 1924. Straightforward convalescence and discharge from hospital four weeks later. The pelvis appeared to be quite clear. She reported at the out-patient department one week after discharge and a small swelling, the size of a tangerine, was felt high up on the left side close to the rectum. The specimen comprised (*a*) the uterus, soft and enlarged, endometrium 1 cm. thick, no visible growth in the uterus; histologically the endometrium had been transformed into decidua; (*b*) the right ovary, enlarged about four times, contained a number of small lutein cysts and some scattered lutein tissue; (*c*) on the left, the tumour, 6 × 5½ × 4 in., bright red in colour, surface nodular, partly covered above and in front by the broad ligament; the Fallopian tube ran around the upper anterior portion of the mass, the left ovary was merged in the tumour. Histological examination showed the tumour to be a chorion-epithelioma; posteriorly it is bounded by compressed layer of tunica albuginea with several follicular cysts; ovarian tissue is present in the centre of the mass, and in front is the remains of the broad ligament; the Fallopian tube can be traced from the uterine cornu to the outer pole of the tumour, and, although flattened by pressure, is normal throughout.

Dr. J. W. BURNS (Liverpool) showed an

Ectopic Gestation in a Tuberculous Fallopian Tube

from a patient aged 26. Four years ago she was confined to bed with reputed appendicitis. Menstruation, previously regular, ceased after June, 1923; three weeks' bleeding in September was followed by irregular hæmorrhages till operation for a tender, fixed right appendage swelling; the left appendage was also slightly enlarged and fixed. Both appendages were removed on Dec. 3rd, 1923. Both tubes showed tuberculous lesions and the right one contained blood-clot with degenerate villi.

Dr. FLETCHER SHAW (Manchester) reported a case of

Perineal Hæmatoma during Labour.

The patient was a primigravida, 39 years of age, and the hæmatoma was first noticed soon after labour commenced. It rapidly increased in size, and when he was called in to see her it had formed a large swelling all over the perineum, up both sides of the vulva, and into the recto-vaginal septum. It formed such a large tumour that he advised Cæsarean section. There was slight albuminuria present. The patient did quite well for two days after the operation, and then the intestines gradually became more and more paralysed and the patient died on the fifth day.

Messrs. W. Gough, M. H. Phillips, Leyland Robinson, and J. St. George Wilson showed specimens and cases, and Mr. Wilson and Dr. Dougal showed instruments.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held in the New Gallery, Edinburgh, on May 7th, Sir DAVID WALLACE, the President, being in the chair.

Dr. JAMES YOUNG read a communication on

Further Investigations into the Cause of Cancer.

After referring to the fact that many observers had isolated organisms from cancer tissue by incubation, Dr. Young went on to show how he had confirmed these findings and how his work would now seem to depend on the hypothesis that these organisms—yeasts, cocci, and bacilli—were different phases of the same parasite. This viewpoint was supported by extensive and rapidly growing evidence in recent literature. It had lately been shown possible to derive from cultures of the anthrax bacillus, yeasts, cocci, and branching filaments. In other words, these forms were to be regarded as merely phases in the life-history of the anthrax bacillus. Dr. Young suggested that as each phase could be rapidly stabilised and resist change, this had led to confusion in bacterial morphology. When a piece of cancer tissue was incubated in a test-tube the organism appeared in a variety of saprophytic forms derived from a phase so intimately locked up with the fresh tissue that it was ordinarily unrecognisable. Dr. Young demonstrated by means of micro-photographs what he believed to be the organism emerging from the cancer cell as plasm rods which went to form the inconspicuous and unstainable " plasm " or amorphous stage from which all the other organised types of the cancer organism were derived. He showed how the cocci, bacilli, or yeasts might develop from this plasm mass either directly or after passing through a second stage in which the " plasm " became encysted by a capsule rich in pigment. This he called the " sclerotical " stage. Hunter in 1892 showed that fungus elements were commonly found after incubating cancer tissue and a definite advance in the research had been accomplished by the discovery of this amorphous stage, which would seem to indicate that the parasite was definitely present in the cancer cell in this inconspicuous form, and, further, this form would appear to be toxi-potential. Dr. Young believed that the evidence he had brought forward supported the view that the cancer cell, like the tumour cell of plants, was a symbiotic compound of two living entities—the normal protoplasm and the parasitic plasm. In this connexion it was interesting to note that a plasm phase had recently been described in *Bacillus tumefaciens*, the causal organism of crown gall.

Discussion.

Prof. G. **LOVELL GULLAND** said that, as an old histologist, he doubted very much many of Dr. Young's conclusions for several reasons. It was well known that normal tissue when incubated often seemed to give rise to many strange forms of life—e.g., yeasts and cocci were commonly found—and he thought that, on further examination, many of the structures described by Dr. Young could be classified as products of degeneration. Cancer most commonly occurred on a free surface, and he suggested that, granted the presence of yeasts, as in cancer of the stomach, these might be of extrinsic origin. From the histological point of view he was always rather doubtful of unstainable material, and many, perhaps for this reason, were inclined to disregard it. Dr. Young, he thought, was inclined to place too much reliance on his " plasm " theory.

Sir **HAROLD STILES** described a visit to Irving Smith's laboratory where he had the opportunity of seeing for himself some of this worker's results with *Bacillus tumefaciens* in relation to crown gall. He had been much impressed, and though in the past he had spent time in endeavouring to disprove the organismal theory of cancer, he would now go so far as to say that he had quite an open mind on this subject.

Mr. **DOUGLAS GUTHRIE** read a paper, illustrated by lantern slides, on the

Styloid Process of the Temporal Bone: Its Variations and their Surgical Significance.

The two most frequent variations were abnormal length of the styloid process and the presence of a stylo-hyoid chain as in the lower animals. In the dog and horse the stylo-hyoid chain reached an advanced stage of development. In apes it was rudimentary, although the body of the hyoid bone was sometimes highly specialised so as to accommodate the laryngeal air sac. Man alone possessed a styloid process firmly ossified to the base of the skull. In the majority of instances those stylo-hyoid abnormalities were of purely anatomical interest, although occasionally cases occurred which gave rise to symptoms. A long incurved styloid process might project into the tonsillar region and thereby cause pain and difficulty of swallowing. After the operation of tonsillectomy, the tip of a long styloid might be found lying exposed in the tonsillar fossa. In the diagnosis the use of an X ray examination might prove helpful, and in regard to treatment the removal of the styloid was a fairly simple matter.

Mr. F. E. **JARDINE** then described a case where a medical man had mistaken this condition for a tonsillar calculus.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on May 1st, Dr. G. M. **DUNCAN**, the President, being in the chair.

Dr. J. B. **DUGUID** read a paper on

Degenerative Conditions Found in the Aorta.

He stated that he had chosen the subject on account of the prevalent impression that atheroma was a condition found almost universally in the autopsies of those over 30 years of age. He had accordingly investigated the records of 100 consecutive post-mortem examinations, and noted the changes found in the aorta under the three headings of (*a*) atheroma, (*b*) syphilitic aortitis, and (*c*) superficial fatty change. Examinations in 48 cases showed no evidence of aortic degeneration, 27 showed definite nodular atheroma in varying degrees of severity, 11 showed definite syphilitic aortitis, 4 showed a state difficult to classify with certainty but suggestive of syphilitic disease, and 10 showed superficial fatty change. Of the total, 7 showed multiple changes. Dr. Duguid pointed out that the first group was not a collection of unusually young subjects, only 25 being under 40 years, and it was surprising to find so high a percentage of healthy aortas. In the 27 cases of definite atheroma the ages were between 55 and 74, and only one case of over 60 years showed no atheroma, from which one might conclude that atheroma was the disease of old age occurring in the aorta. After briefly describing the changes found in atheroma, the speaker indicated that it was a disease mostly affecting the descending aorta. Syphilitic aortitis was then described, and emphasis laid on the constancy with which it attacked the first part of the aorta with a more diffuse and more irregular destruction; and on the age-incidence, which was much lower than that of atheroma. From this, Dr. Duguid deduced that the lesion giving the so-called " murmur of old age " was unlikely to be a lesion of the first part of the aorta, as had been suggested, because the first part of the aorta was not the part commonly affected in the " disease of old age." In this deduction the state of the aortic valves was not considered, as the aortic orifice was regarded as a structure in the composition of the heart itself. The ten cases of superficial fatty change occurred in bodies of ages from 38 to 73, but this was not of importance, as the condition was found even in infants, especially in cases of death from burning. All but two of the cases observed had died from acute suppurative conditions, and the condition of the aorta could be regarded as an acute toxic state. The histology of the condition was described, and Dr. Duguid pointed out that, like the other definitely toxic condition, syphilis, it attacked often the first part of the aorta. From the infrequency of the incidence in the post-mortem room, he believed that this was a condition not specially related to atheroma or to syphilitic aortitis, and, further, that it was a disease capable of completely clearing up.

Exhibition of Specimens.

A demonstration of pathological specimens was given, the following being the exhibitors: Prof. J. Marnoch, Prof. T. Shennan, Mr. Alexander Mitchell, Dr. R. Richards: Specimens of surgical pathology. Dr. John Cruickshank: Photographs and specimens illustrating tumours in fish. Dr. Duncan: A series of microscopic slides of pathological states of the appendix. Dr. H. Edgar Smith: Specimens of tumours of the eyeball. Dr. Alexander Low: A series of stereoscopic photographs of various developmental anomalies in man and lower animals. A discussion of the exhibits followed.

Reviews and Notices of Books.

A TEXT-BOOK OF OPERATIVE DENTISTRY.

Fourth Edition. Edited by C. N. JOHNSON, M.A., L.D.S., D.D.S., F.A.C.D., Professor of Operative Dentistry, Chicago College of Dental Surgery. London: Heinemann. 1923. Pp. 1136. 60*s.*

IT is an instructive comment on the development of dentistry that this book, which is devoted almost exclusively to operative details, should extend to over 1100 pages without exhausting the subject. Indeed, the reader may feel that some very important branches of operative dentistry receive insufficient consideration, while others, such as the construction of crowns and bridges, are not described at all.

The book commences with an excellent description of the macroscopic anatomy of the teeth, and since a sound knowledge of the anatomy of the teeth is essential to successful conservative dentistry, such a section is a welcome feature. The illustrations are unusually good and convey the chief details admirably. A short account of the points of surgical importance appended to the description of each tooth would have added to the value of this section. In the account of the pulp it is stated that it does not contain lymphatics, and the writer goes on to say that this is of pathological interest. Schweitzer has, however, demonstrated the presence of lymphatics in the pulp, and his work has been confirmed by Dewey and Noyes, two American workers. There is an excellent chapter on asepsis in the operating room by A. E. Webster, which, if it be somewhat of a counsel of perfection, is none the less a sound and shrewd contribution. In this respect there is much room for improvement in dentistry. Though the days of the consulting-room which resembled a drawing-room are steadily passing, yet it cannot be said that the equipment of the average dental surgery has any logical relationship to the surgical principles on which dentistry is based. The chapter on cavity preparation follows on the lines laid down by G. V. Black and is in every way sufficient. The various filling materials and the methods of using them are described not too fully, but on the whole adequately, though we think that the allowance of two pages to silicate fillings is hardly sufficient. We do not find any mention of the method of using amalgam introduced by Sir Harry Baldwin, in which the amalgam is packed into wet cement. In this country the merits of this method in securing additional retention are widely recognised. A very full account of the technique of removing impacted third molar teeth is contributed by C. E. Kells. We are glad to note that the writer deprecates the routine extraction of the second molar as a preliminary to removal of the third molar. There can be no doubt that in the majority of cases it is unnecessary and gives little help. The special operation devised by Kells and described in detail appears to us to be needlessly complex and requires an unnecessarily large armamentarium.

The chapter on the difficult question of the treatment of pyorrhœa is disappointing. The author advocates the use of retainers for teeth which are loose. We had thought that the point of view which attempted to save teeth at all costs, irrespective of the pathological consequences of keeping teeth hopelessly loose through disease, had been abandoned. It belongs to the period when dentistry was a form of tooth carpentry and took little heed of pathology. More than half the book is taken up with an account of radiology and orthodontics. In America the majority of dentists have an X ray plant installed. In this country it is still comparatively uncommon for dentists to take their own radiographs. Yet the number is increasing, and no doubt this section of the book will prove a welcome one. The section on orthodontics is excellently written and sufficiently up to date to include an account of the muscle-training exercises devised by A. P. Rogers of Boston.

The book may be commended as a sound guide to the operations of dentistry.

THE ELEMENTS OF VITAL STATISTICS.

New edition. By Sir ARTHUR NEWSHOLME, K.C.B. George Allen and Unwin, Ltd. 1923. Pp. 623. 24*s.*

THE subject of vital statistics is not everyone's taste. Most people are content to leave it severely to those who either possess the odd capacity for enjoying it, or by some malignancy of fate are compelled to study it. Nevertheless, its importance is great. Only by examining records can the health of the community be measured and the effect of modern methods of life ascertained. Medicine without statistics would lose its clearest modern claim to rank as a science. So long ago as 1889 Sir Arthur Newsholme placed us in debt by writing a book on the subject which, after passing through several editions, was revised in 1899. Now he has entirely rewritten it and has added so much new matter that the book is more than twice the size of the original. It has become more a volume for the specialist who desires to be brought up to date in recent studies, than for the student making his first acquaintance with the subject. The most distinctive new element in the book is its appeal to American as well as to British readers, as evidenced by the introduction of much material drawn from United States Public Health Reports and other sources, material which is inclined to be overlooked in this country, and is convenient to have thus presented in compact form.

Familiarity with the earlier editions raised hopes that the author, now matured in experience and knowledge, would reach the height, only attained by the expert, of being able to make his subject attractive and appear simple to the tyro. New material and more trustworthy has appeared since 1899. The author has since then held high office in this country and has come into close touch with his American confrères. Nevertheless, the volume under review has in some respects not fulfilled our hopes. The student, attempting to grasp the geography of the forest of statistic fact, is likely to get more and more fogged by constant direction to seek elsewhere on page X or page Y in reports A to Z for further information; by doubts cast on the reliability of information when found; by difficulties presented to him in discovering by statistical method the meaning of national records. One chapter entitled Arithmetic of Elementary Statistics, but dealing with the modern methods, must be noticed unkindly. In the preface it is pointed out that the introduction of more elaborate methods has repelled many hygienists. There is little to wonder at in this, since the book before us is not the only one in which the subject is dealt with in a manner difficult to follow. Fundamental terms, such as "probable error," are not clearly defined. The "normal curve" is described as the form taken by the binomial $(p + q)^n$ when n is infinite. What inexperienced reader could follow this incomplete and not very accurate statement? On one page (p. 516), where an example is given of Poisson's formula, there are actually three arithmetical errors and then a comment is made that numbers must be large for the "formula to work," an expression quite inconsistent with the spirit of modern statistical methods, which is essentially logical. It is a pity this chapter falls so far short of excellence, for the subsequent criticism of the application of the methods shows common-sense and might, therefore, lead readers to think that the methods themselves were faulty.

The scope of the book is wide, dealing as it does with all fields of life from birth to death, and discussing population and death-rates, infant mortality, marriage and fertility, infectious and industrial diseases, life-tables, housing and poverty, as well as statistical method and the graphic presentation of statistics. Possibly a more rigorous selection of material would have made the book more readable, but with the wealth of the material at the disposal of the author the difficulty of deciding what to put in must have been great. Throughout the book runs the theme that health and social prosperity move *pari passu*, whether the general death-rate be considered or its component parts, contributed by tuberculosis, infant mortality, or zymotic diseases. Fertility is presented as an exception; it is lowest where the social standing is highest, and is in inverse relation to mental activity; it is highest in the lowest social grades, and is in direct relation to physical activity. It is well that these generalities should be brought out.

LOCAL ANÆSTHESIA.

Its Scientific Basis and Practical Use. By Prof. H. BRAUN. Translated and edited by MALCOLM L. HARRIS, M.D. London: Henry Kimpton. 1924. With 231 illustrations. Pp. 411. 25*s.*

IT is ten years since the appearance of the first translation in English of Braun's famous text-book. This was from the third German edition, and now that the German version is in its sixth revised edition Dr. Malcolm Harris has thought rightly that a new English edition is required. The book is not much more extensive than before, but though slightly smaller in size is more closely printed. The main features, of course, remain the same, but there is a good deal of new matter. This is particularly noticeable, perhaps, in those parts of the text dealing with poisonous effects of local anæsthetics, prolonged experience having brought to light dangers that were not previously anticipated. Sometimes, too, these have become evident through novel methods of introducing local anæsthetics—for example, in splanchnic and in sacral anæsthesia. Apothesine, which is unmentioned in the last English edition, receives a considerable paragraph to itself in this one. The editor has done his work well. The original text is closely adhered to throughout, and when original matter not in the text is introduced the fact is made plain. The present edition will, we have no doubt, increase the already high reputation of Braun's work.

L'HÉLIOTHÉRAPIE À L'ALTITUDE.

By Dr. GERMAIN MATHIEU. Paris: A. Maloine et fils. 1924. Pp. 325.

THE purpose of Dr. Mathieu's book is to convince the medical profession in France of the necessity of making use of the combined sun and altitude treatment, which Rollier has proved to be so efficacious in surgical tuberculosis. The author has had the advantage of a long stay at Leysin and has collected a large amount of information affecting various aspects of his subject. He gives an exhaustive statistical study of the results obtained in Rollier's clinic during the period 1913–1920. The plan of giving the proportion of patients cured during each half-year of treatment is a good one, as it affords an idea of the probable duration of treatment in each type of case. The functional condition of joint lesions after arrest of the disease is also dealt with and in most cases is surprisingly good. Some 20 pages are devoted to the subject of heliotherapy in pulmonary tuberculosis; in this chapter Dr. Mathieu reaches the conclusion that sun treatment, if properly carried out, is definitely beneficial and does not increase the risks of hæmorrhage and congestion. He attributes the disappointing results hitherto obtained chiefly to the spasmodic and pusillanimous way in which this treatment has been carried out, and to the lack of knowledge regarding the type of case in which it is indicated. No such brilliant results are likely to be obtained as in surgical cases, and the extra supervision necessary has made medical officers of sanatoriums unwilling to embark systematically on this form of treatment.

In subsequent chapters Dr. Mathieu deals with the technique of heliotherapy and gives a large number of meteorological data chiefly derived from Dorno; he finally enters into an interesting discussion concerning the mode of action of the sun-bath. Although this problem is at present incapable of solution, the facts of the case are presented in such a way as to provide plentiful stimulus to thought. The old view, that the curative action of sunlight was due mainly to the ultra-violet rays, lost ground when it was found that they were unable to penetrate more than 1/10 mm. of skin. Rollier's theory that cutaneous pigment might transform these rays into ones of longer wave-length has no foundation in experiment. On the other hand, the recent discovery that it is the ultra-violet rays that are most effective in the prevention of rickets, has again swayed opinion in the direction of the shorter wave-lengths.

The action of light in increasing the ease with which hæmoglobin parts with its oxygen, together with the high penetrating power of the visible rays (which are capable of raising the temperature of the subcutaneous tissues to 116° F.), is thought by Dr. Mathieu to account for the increase in metabolism and the marked muscular development so characteristic of the sun treatment. The fact that a high degree of immunity is developed in specific fevers accompanied by rashes suggests that the protective function of the skin may not be confined to preventing the germs of disease from entering the body, but may also be concerned with the production of antibodies as a second line of defence. Rollier's observation that the pigmented skin was unaffected during an outbreak of chicken-pox, Leuba's failure to make vaccination "take" on pigmented skin, and the fact that tuberculous patients who pigment well tend to have a good prognosis are given in support of the theory that a healthy, pigmented skin raises the immunity of the body.

In attempting to assess the relative importance of the various factors concerned in the helio-alpine treatment, Dr. Mathieu broaches a very difficult subject. His conclusion, "on clinical grounds," that sunlight is by far the most important factor is not supported by sufficient evidence to make it at all convincing; especially as no mention is made of the increase in metabolism caused by exposure of the surface of the body to cold air.

MEDICAL HISTORY.

Magistri Salernitani Nondum Cogniti. A Contribution to the History of the Medical School of Salerno. By Dr. PIETRO CAPPARONI. With a Foreword by Sir D'ARCY POWER, K.B.E., F.R.C.S. Eng., &c. London: John Bale, Sons and Danielsson, Ltd. 1923. Pp. 65. 15*s.*

THIS volume forms No. 2 of the Wellcome Research Studies in Medical History. Everything connected with Salerno is of interest to the medical profession, and we congratulate Dr. Capparoni on having made such notable additions to the already published and valuable researches of De Renzi and Piero Giacosa. Dr. Capparoni tells us that while on military duty at Salerno in 1916 he had the opportunity of studying an MS. belonging to the library of the Cathedral of Salerno. It contained the Liber Confratrum and an obituary of the Confraternity of the Cruciati which was founded during the Middle Ages in the chapel of St. Michael in the cathedral. Part of the MS. goes back to the latter half of the eleventh century. A number of names are those of medical men, some again of them being those of Scotsmen and Englishmen, and it was this fact that led Dr. Capparoni to make a careful examination of the MS. From these documents and sundry others he was able to obtain the names of 31 medical men unknown to De Renzi and additional details about 36 masters already known to him. Before entering on a description of the MS. and his researches therein, Dr. Capparoni gives a most interesting historical review of Salerno and its medical school which probably began somewhere about the eleventh century, though there had been a hospital as early as the year 820. The largest hospital was that founded by Matthew of Aiello in 1183. The five periods into which the history of this great school was divided by the late Prof. Modestino del Gaizo are as follows: (1) The Monastic Hospital and perhaps scholastic period (before 1000); (2) Renaissance of Classical Medicine (between 1000 and 1150); (3) period of popular hygienic medicine (twelfth century); (4) period of creation of surgical schools (thirteenth century); (5) period of decadence (from fourteenth century to 1811). The dates of the various scripts in the MS. run from about 1073 to the sixteenth century.

Dr. Capparoni has conferred a real benefit upon all those interested in the history of medicine. He gives his readers a number of illustrations reproduced from photographs of various leaves of the MS. and of other documents in the Cathedral of St. Matthew. Transcriptions of portions of many of these are given in a documentary appendix, and the only fault which we can find with the book is that the transcriptions have not attached to them the number of the plate to which they refer; this makes it difficult for anyone not an expert in palæography to identify them. However, Plates 7, 8, 10, 22, 23, and 25 are fairly easy to identify, although the script, owing to necessary reduction, is very small. Among other illustrations are a view of Salerno as it is to-day and two of the pulpits in the cathedral, most beautiful structures in Cosmato work. The first illustration (p. 34) also shows a magnificent Paschal candlestick in the same work. Altogether, the book is a joy both to read and to look at.

CONSTRUCTIVE CONSCIOUS CONTROL OF THE INDIVIDUAL.

By F. MATTHIAS ALEXANDER. With an Introduction by Prof. JOHN DEWEY. London: Methuen and Co. 1924. Pp. 317. 10*s.* 6*d.*

Prof. Dewey in his introduction, whilst admitting that Mr. Alexander's principles and procedure are hard to understand and accept, still leaves us in danger of rejecting them for their incomprehensibility. Man, we are told, cannot meet the complexities of civilised life because of his lack of sensory appreciation of his own movements. This is to be remedied by unlearning his bad habits and paying attention to the "means whereby" rather than to the "end in view," and this process is constructive conscious control, to be achieved by a course of training and manipulation at the hands of a teacher. It is not easy, by reading alone, to grasp how by this procedure what Prof. Dewey calls the greatest of all tasks can be executed—the task of rescuing mankind from "all but a universal state of confusion, discontent, and strife." Mr. Alexander is possibly an intuitionalist who arrives at conclusions valid for himself and those to whom he conveys his enthusiasm, and the conclusions of such a one cannot always be set forth in a manner convincing to others.

JOURNALS.

QUARTERLY JOURNAL OF MEDICINE.—The April number contains the following articles: The Variations in Gastric Secretion of the Normal Individual, by James R. Bell and William MacAdam. Observations conducted by means of fractional gastric analysis, on 20 consecutive days, upon the same normal individual under similar conditions led to the conclusion that a single fractional test-meal may not afford a typical representation of the true state of gastric secretion.—Arterial Elasticity in Man, by J. Crighton Bramwell. Observations were made upon the arterial elasticity both in health and disease, and the effects of variation of this function upon the circulation as a whole. Diastolic blood pressure is an important factor in determining arterial elasticity, which rapidly diminishes as the diastolic pressure rises. In arterial disease the elasticity becomes impaired, and its characteristic relationship to the pressure is no longer present.—Studies in Calcium and Phosphorus Metabolism: Part III., The Absorption of Calcium and Phosphorus and their Fixation in the Skeleton, by S. V. Telfer. Osteoporosis and rickets-like changes in the bones of puppies resulted from a dietary deficient in calcium but containing an adequate supply of phosphorus. The addition of calcium lactate alone to such a diet was sufficient to cause a normal skeletal development. Various factors concerned in the normal absorption of calcium and of phosphorus are discussed, and the fixation of phosphorus in the bones was found to be dependent upon the retention of calcium.—Renal Glycosuria: A Clinical and Metabolic Study, by F. G. Finley and I. M. Rabinowitch. Six cases of renal glycosuria which were observed at the Montreal General Hospital are described. These formed 2 per cent. of a total of 275 consecutive cases referred to the metabolic clinic as diabetics. The article closes with some observations upon carbohydrate metabolism.—The Association of Blue Sclerotics with Brittle Bones and Progressive Deafness, by William Stobie. Fragility of bones occurring in association with a dark blue discoloration of the sclerotics was first recorded by Eddowes in 1880. The author gives details of cases since published, and proceeds to describe a family in certain members of which this peculiarity existed, together with otosclerosis. The anomalies are transmitted directly, occur in males and in females, and do not appear to shorten life. The deafness does not usually appear before the second or the third decade. The colour of the sclerotics is well shown in the plate.—The Inorganic Phosphorus Content of Cerebro-spinal Fluid, by Henry Cohen. The normal inorganic phosphorus content was found to be 1·25 to 2 mg. per 100 c.cm. A definite increase occurs in meningitis, but not in encephalitis lethargica. In chronic diseases of the nervous system the increase is very slight. The rise in the acute forms of meningitis is thought to be due to a greater permeability of the cells of the choroid plexus.—The Proteins of the Serum in Cancer, by E. L. Kennaway. Loeper described in 1920 an increase in the globulin in blood serum in cancer. This excess is believed to be derived from the tumour. The author has made observations on 104 cases, including carcinoma, non-cancerous conditions, and normal individuals. He finds that in some advanced cases of carcinoma there is an increase in the serum globulin greater than that found in other conditions. Equally advanced cases, however, may show no such change. No operable case was met with in which the amount of globulin was abnormal. The method does not therefore appear to be one of diagnostic value.—A Clinical Blood Coagulometer, by Owen S. Gibbs. The principle of the new type of blood coagulometer described consists "in forming a bead of blood on a thin wire, which on being tilted allows the bead to run up and down . . . , at the moment of coagulation the bead stops and adheres to the wire." Contact of the blood with the body tissues shortens the coagulation-time, but this is not so in hæmophilia. Addition of fresh tissue juice or serum from an animal to hæmophilic blood causes coagulation at practically normal rates. The apparatus is illustrated by means of a plate.

THE LATE DR. W. A. PINNIGER.—The death occurred very suddenly at Brighton, on May 2nd, of Walter Augustus Pinniger, M.R.C.S., L.R.C.P. Lond., who had been in practice in Brighton for over 30 years. He was actively associated with the Brighton, Hove, and Preston Provident Dispensary for many years, and had an extensive private practice. Aged 74, he had only recently gone into retirement. Following a service in St. Margaret's Church, where he had been a sidesman and a trustee, the remains were interred in the Brighton and Preston Cemetery.

Reports and Analytical Records.

ADALIN; BUTOLAN; OPTARSON; THEOCIN SODIUM ACETATE; LUMINAL.

(Bayer Products Limited, 1, Warple-way, Uxbridge-road, London, W. 3.)

Adalin (bromdiethylacetylcarbamide) is an almost tasteless and odourless sedative and hypnotic and is recommended for use in cases of neurasthenia and such nervous conditions as are found before minor operations. Its safety is suggested by the fact that while the normal dose as a sedative is one to two tablets of 5 gr. each three or four times daily, and as a hypnotic two or three tablets half an hour before bed-time, as much as 125 gr. have been taken in a single dose without any undesirable effect other than protracted sleep. As a rule, it is well borne by the gastro-intestinal tract, while it does not seem to depress the heart. The tablets can be taken in a little cold water when prescribed as a sedative, and with a hot drink, the nature of which is ordered by the physician, when prescribed as a hypnotic.

Butolan. This is a brand of carbamic acid ester of p-oxydiphenylmethane, and is used as a remedy for oxyuriasis. In its ordinary form it is a crystalline powder almost insoluble in cold water and is practically tasteless. No disturbance of the digestive tract has been noticed after its administration, and animal experiments have shown that the ingestion of huge doses produced no ill-results. The active principle of butolan kills the oxyuris within five minutes in a 1/4000 dilution. The preparation is sold in compressed tablets of 7½ gr. each (0·5 g.), and the adult treatment is one tablet taken three times a day for a week. The course should be followed by an aperient. The average dose for children is half a tablet and for infants a quarter of a tablet, but children of 10 years may take the adult dose. In obstinate cases two courses of treatment may be necessary, but the second should not commence till eight days after the end of the first course, leaving time for the eggs of the parasite to mature.

Optarson is an amino salt of heptin chlorarsenic acid, containing about 30 per cent. of arsenic, and strychnine, its use being indicated in nervous conditions, exhaustion, and in convalescence following infectious diseases. Its tonic action is not attended with any signs of local irritation and no unpleasant odour is imparted to the breath, while its efficacy is prompt and increases with the progressive action of the arsenic. The remedy is supplied in packages containing 12 ampoules of 1·2 c.cm. solution, and the general dose is 1 c.cm. every other day by hypodermic injection. In delicate persons the injection should be given only twice a week to commence with.

Theocin sodium acetate (soluble theocin) is a synthetic reproduction of an alkaloid occurring in minute quantities in tea-leaves and possessing marked diuretic properties. It is closely allied to theobromine, and has distinctly diuretic effects. The dose of theocin sodium acetate is 2½ to 5 gr. two or three times daily dissolved in water, but it can also be given intravenously or in suppositories. The drug is supplied in bottles of 1 oz. and ½ oz., and in tubes containing 20 1½ gr. tablets.

Phenylethylmalonylurea, having the descriptive name phenobarbital, and the registered name "Luminal," is a synthetic hypnotic and sedative which occurs as a white powder with a slightly bitter taste and is almost insoluble in water. The Bayer brand is supplied in powder in ½ oz. and 1 oz. cartons, in ¼ gr. tablets in bottles of 100, and in 1½ gr. tablets in bottles of 50, and also in tubes of various quantities and strengths. In the treatment of epilepsy luminal has established itself even more widely on the Continent and in America than in this country, but we may recall that not long ago in our columns[1] Dr. Gordon Holmes confirmed the benefits that can be obtained by its use, particularly in idiopathic major epilepsy. The drug is first-cousin to veronal, and, like all sedatives, will reduce the number of convulsions in epileptics if given in large enough doses. In fact the ideal drug being one with the maximum anticonvulsive and minimum sedative effects, luminal, of all preparations, comes nearest to what is required. The drug is contra-indicated where there is great debility, arterio-sclerosis, marked pulmonary or cardiac disease, and nephritis. Even small doses should be employed cautiously. In epilepsy, the dose for which varies according to severity and frequency of attacks, the drug may be taken, apparently, for an indefinite period, the average dose for an adult being 1½ gr. given at night and in the more severe types 3 gr. or more daily. For children the dose is proportionately smaller, as it is when employed as a sedative.

"TABLOID" NUCLEO-LECITHIN COMPOUND.

(Burroughs Wellcome and Co., Snow Hill Buildings, London, E.C. 1.)

This substance is an addition to the comprehensive series of compressed products issued by this firm. It is a compound, in which nuclein, lecithin, and the glycerophosphates of calcium and potassium are combined in the following proportions:—

Nuclein	gr. ¼
Lecithin	gr. ½
Potassium glycerophosphate	gr. 1
Calcium glycerophosphate	gr. 1

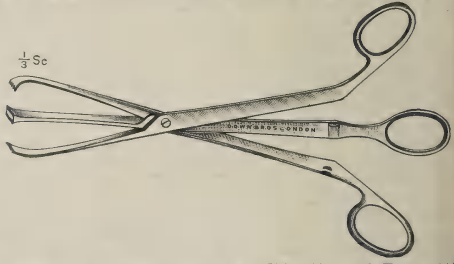
Nuclein has been claimed to possess a stimulating action in the formation of white blood corpuscles, thus raising the opsonic index and acting as a bactericide. The qualities and uses of lecithin are well known. The addition of the glycerophosphates of calcium and potassium is designed to exert a special selective action on the nervous system.

"Tabloid" Nucleo-Lecithin Compound is sugar-coated, so that the lecithin component is well disguised and at the same time protected from deterioration due to atmospheric action. The compound may be administered with any diet as a restorative, nutrient, and reconstituent in nervous and nutritional disorders. The drug is supplied in bottles of 25 and 100.

New Inventions.

A NEW THREE-BLADED PERITONEUM FORCEPS.

The instrument here illustrated will be found useful in grasping and bringing two raised peritoneal folds into position for suture, in an anastomosis, in sinking a bowel stump, or in invaginating a gastrostomy or cæcostomy tube. It is a modification of Pannett's three-bladed peritoneum forceps, the crushing blades of which are restricted in use to the parietal peritoneum. The multiple-toothed, non-crushing grip of Stiles's peritoneum forceps has been substituted for the crushing blade of Pannett's instrument.



Messrs. Down Bros., Ltd., St. Thomas's-street, London, S.E. 1, are the manufacturers.

Sheffield. Thos. B. Mouat, F.R.C.S. Eng.

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[1] The Lancet, 1923, i., 502.

THE LANCET.

LONDON: SATURDAY, MAY 17, 1924.

BIOCHEMISTRY.

CAMBRIDGE put on scarlet on Friday last to greet the Chancellor, to do honour to a great and well-loved teacher, and to open the new biochemical laboratories. Everyone will applaud the discretion of the trustees who have chosen the provision of an ample material field for the development of Prof. HOPKINS's activities as the best way of carrying out Sir WILLIAM DUNN's direction that his estate should be used "for the alleviation of human suffering." We are reminded of the simple motto which guides the benefactions of the Rockefeller Foundation—"the well-being of mankind throughout the world"—and it is a signal encouragement to the profession that the development of medicine along the broadest lines should be so generously recognised as one of the most hopeful roads towards human betterment.

No one need be very old to remember the time when biochemistry was not. Thirty years ago the English student of physiology was exhilarated by Dr. WOOLDRIDGE's translation of Bunge's Lectures which was published in 1890, and wondered at the erudition of Prof. HALLIBURTON's "Text-book of Chemical Physiology and Pathology" which appeared in the following year. There was a general feeling that those who sought to understand the working of the body ought to know its chemical composition as well as its minute anatomy, and courses of physiological study followed a rough grouping into experimental, chemical, and histological sections. Chemists as a whole were contemptuous of the messy slimes associated with life, though a change of heart was adumbrated by amiable disputes as to the relative merits of "chemical physiology" and "physiological chemistry." The mechanistic physiology of the nineteenth century was reaching its culmination, the impetus of DARWIN on biological studies was beginning to fade, and with the remarkable advances made by organic chemists in elucidating the chemical structure of some of the complex compounds associated with life a frame of mind arose which was convinced that the real key to the riddle of the difference between live and dead things lay in a knowledge of the chemistry of animate beings. The new impetus in inquiry was appropriately celebrated by a fresh word and "biochemistry" came into being, definitely perhaps in this country by the establishment of the *Biochemical Journal* by BENJAMIN MOORE and Mr. E. WHITLEY in 1906. And in these last 20 years it has been everywhere one of the most active and productive—quantitatively if not always qualitatively—of the departments of natural knowledge. The dream that it would quickly unlock the mystery of life has naturally not come true; it has perhaps not made any progress in that direction, it has sometimes even deflected the search into fruitless lines. Minute anatomists at one time felt sure that if only they could make the microscope magnify enough they would see life itself going on. But if biochemists and microscopists have both failed to realise their ideals, their energetic and enthusiastic pursuit of them has led to immense progress in method and knowledge.

The importance of biochemistry seems to lie in two directions. We still have the old distinction between "physiological chemists" and "chemical physiologists," between, for example, those who study the fate of β-phenyl-iso-butyric acid in the body in terms of its chemical constitution, and those who examine the influence of a cow's diet on the anti-rachitic value of its milk. But the enormous gain in the existence of a more or less independent discipline of biochemistry is that both groups of students now work in the same building, belong to the same society, and publish their results in the same journal. Biochemistry, in short, achieves what is so much needed in these times—a union and collaboration between two sections of scientific workers instead of a segregation and separation which has been the unfortunate result of the modern expansion and development. And it does this in the most effective way by its very nature, and without any of the useless scheming for coördination and integration of which so much is heard and so little seen. The chemist and biologist now lie down together; they desire knowledge and ensue it. And if physiological chemistry has not explained life it has made a surprising amount of progress in explaining the mechanisms of live animals and plants and how they work, partly along the lines of classical chemistry, more particularly in the field where the commingling of chemistry and physics shows again the fruitfulness of natural coöperation. That many harassed minds have found as much comfort in "colloids" as the old lady did in "Mesopotamia" does not detract from the really substantial progress in our understanding of how the body works which has been attained by knowing something of the properties of particles too big to be molecules, too small to be pieces of stuff. And in the same way the chemical physiologist has pushed forward with detailed explanations in almost every department of biology, and not least in the normal and abnormal human physiology which is the special concern of medicine. No further evidence is needed of the utility of the theory and practice of bio-chemistry in medicine than the change which has come over clinical laboratories in about the last 15 years. To the outfits for histology and bacteriology there is now everywhere added the armamentarium and the vocabulary of the chemist. The progress of bio-chemistry has been so ample and sound because it has begun and gone forward on a broad and generous basis, comparative as well as human, detached from, and yet intimately connected with, technology, furnishing food for the spirit as well as for the body. There is every prospect that in its new home at Cambridge it will continue its comprehensive career of catholic interests.

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THE USE OF THE GALL-BLADDER.

WHEN surgery becomes necessary in the treatment of gall-bladder disease the question more frequently than not arises as to the advisability of removal of the organ. Controversy on this subject has existed since the birth of gall-stone surgery, yet even now a completely satisfactory answer is not forthcoming. It is the old dilemma in which the surgeon is so often placed. He is called upon to take some active measure in the treatment of a disease which has already proved itself refractory to non-operative treatment; yet knowledge of the physiology, let alone the pathology, of the organ with which he has to deal is sadly wanting. Under these circumstances the evolution of the treatment of gall-bladder disease has been necessarily and commendably slow and cautious. Only now are such authorities as Sir Berkeley Moynihan and Mr. James Sherren, after observation extending over many years, able to recommend with confidence the excision of the gall-bladder in certain pathological conditions. The feasibility of this operation, on theoretical grounds, must obviously depend upon two considerations: whether the gall-bladder performs any important function in the physiological economy, and whether, should it be removed, its work can be vicariously performed by some other structure in the organism. The answer to the latter question has been given to this extent: many persons from whom the gall-bladder has been removed have lived long and apparently normal lives. They are free from the disturbances for which they sought aid, they have been restored to health. Progress, however, in the elucidation of the normal activities of the gall-bladder has been very slow. Only quite recently can it be said that any real knowledge has been gained. So resistant has this problem been to the attack of the investigator that many have held that the gall-bladder subserves no important function at all, that it is in fact an organ destined to disappear during the course of evolution, a structure which has outstayed its uses, assumed no new rôle, and has become rather a menace than a help to the organism.

The lecture[1] delivered before the American College of Physicians by Dr. J. E. Sweet, Professor of Surgical Research in the University of Pennsylvania, and now reprinted, forms an admirable example of the manner in which such problems should be attacked. He points out how important it is in a problem of this kind to approach it from every point of view. Its development, its structure, its comparative anatomy, the changes which take place when it is removed, all are capable of shedding light upon the physiological work of any organ. As to development, the gall-bladder is formed from the same group of ancestral cells which gives birth to such important structures as the stomach, duodenum, liver, and pancreas. From the way that it is disposed so that the fundus is lower than the apex, from the fact that the cystic duct is obstructed not only by being bent, but by the presence of mucosal valves, it is clearly seen that it is much easier for bile to enter its lumen than to escape. It does not look as though the contents were ever meant to emerge by way of the cystic duct. Nor have any experiments ever devised to demonstrate active expulsion by the contraction of its walls succeeded in doing so. The mural muscular tissue in microscopic section appears much more allied to the muscularis mucosæ than to the proper muscular coat of the intestinal wall. It is probably concerned with movements of the mucosa to facilitate absorption. The submucosa of the gall-bladder is unusually richly supplied with lymphatics, implying the possession of a strong absorptive function. This, indeed, the gall-bladder has been proved to exert by the experiments of Mann at the Mayo Clinic. Prof. Sweet calls attention to the little parietal sacculi seen in the extra- and intra-hepatic ducts described by Thiele, which Beale in 1889 regarded as supplementary gall-bladders. It is interesting to read that they are more numerous and bigger in those animals which do not possess a gall-bladder, as is also the fact that after cholecystectomy they increase in size and number. Prof. Sweet brings forward evidence to show that the gall-bladder is occupied with the metabolism of fats, so that one function at least seems definitely to have been assigned to the gall-bladder. It was always difficult to believe that an organ with such a very differentiated structure served only as a reservoir. The enigma of the gall-bladder, like other physiological problems, seems gradually to be yielding to well-planned experimental attack.

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RESEARCH ON DISTEMPER.

The council appointed to administer the *Field* Distemper Fund, which has been instituted to further the investigation of this baffling disease in dogs, has recently issued a second report, which includes the recommendations of the Technical Scientific Committee presided over by Prof. C. J. Martin, F.R.S. The report sets out the encouraging financial support which has already been accorded to the scheme. It was estimated that £25,000 would be required in the first three years; about £9500 was received during the first year (1923), and future annual subscriptions to the amount of £3400 have been promised. The fund has therefore made a good start, but continued support will be needed if the investigation is to have a reasonable chance of success. After some delay, for which the council was not responsible, the specially isolated and equipped kennels and laboratories have been completed, and it is expected that the work in the isolation compound will begin forthwith. The first undertaking in this department concerns the breeding in isolation of healthy puppies for experiment.

The Medical Research Council is taking a large share in the investigation by allowing a part of its farm to be used for the premises designed for the research, and also by affording the veterinary experts the coöperation of the members of the scientific staff of the Hampstead Institute. This arrangement is a very suitable one, and will no doubt prove a fertile combination, since pathological problems in man and animals are largely identical. A number of human diseases are awaiting illumination derivable from animal experiment, but this help can only come indirectly, since the morbid states chiefly concerned are confined to man. The information which it is expected will accrue from the study of distemper, however, is expected to throw light on human disease, not only because distemper resembles in many ways influenza, measles, and such "zymotic" diseases, but because the basis of pathology as a whole will be widened. The experimental work of infection of animals with distemper has not yet begun, but preliminary work has already yielded interesting results, and the study of filter-passing viruses in general has been under survey, especially with a view to artificial culture. In spite of the fact that recent writers on distemper (Ferry, McGowan, Torrey, 1910–13) have pronounced after extensive investigations in favour of the *Bacillus bronchisepticus* as the cause of the disease, expert opinion has by no means entirely accepted this verdict, and an ultra-microscopic virus such as Carré believed that he had established has received wide support. The main reasons for this attitude of scepticism towards the bacillary hypothesis have been three: (1) the great difficulty which investigators have experienced in isolating experimental animals, so as to avoid unforeseen sources of infection which would render the results of inoculation open to question; (2) the somewhat indefinite characterisation of the bacillus in question, as distinct from other widespread strains or species—e.g., *B. fæcalis alkaligenes*; (3) the rather incomplete picture of the disease following the inoculation of cultures.

During the past few months 23 cases of typical canine distemper occurring in the London area have been examined post mortem by Mr. R. E. Glover, M.R.C.V.S., in the laboratories of the National Institute for Medical Research, and *B. bronchisepticus* has been sought in the various organs. It was only found in a small fraction of the cases; twice it was isolated from the tracheal mucous membrane of the 23 dogs examined, and three times from the bronchopneumonic lungs present in 17 of the animals. It cannot be said that this finding definitely negatives the bacterial theory of distemper, but a repetition of such a result on a larger scale might bring the matter much nearer settlement. The bacillus is easily cultivated, and consequently negative evidence as to its occurrence has a definite value. If the relation of *B. bronchisepticus* to distemper is not causal but only accidental or of the nature of a secondary infection, other localised epidemics unaccompanied by this bacillus are not unlikely to occur. The recent experience of Shoicho Kondo (1923) in Japan, however, again supports the claim of *B. bronchisepticus*. This worker was able to transmit the disease by inoculation of lung juice, but not when this had been filtered. From the affected lungs of 54 dogs suffering from distemper he isolated the bacillus 46 times, and believed that he gave the disease by injecting pure cultures. The same criticisms might be made of his work as of that of the writers quoted above, but since his paper is at present only available in abstract these would be premature. A world-wide association of *B. bronchisepticus* and distemper makes a strong suggestion of a causal relationship, but the history of an epidemic carefully investigated without the discovery of the bacillus would afford even more convincing evidence in the opposite sense. The great difficulties associated with the search for an ultra-microscopic virus are being seriously tackled at the laboratories of the National Institute for Medical Research with the very complete resources at the disposal of the scientific staff. An attempt is also being made to throw light on the epidemiology of distemper by the systematic collection of reports of outbreaks with a view to their statistical analysis.

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[1] The Gall-bladder: its Past, Present, and Future. Reprinted from International Clinics, vol. i., Series 34.

Annotations.

"Ne quid nimis."

THE ORIGIN OF THE LARYNX.

THE larynx and the voice have been connected at least since the times of Aristotle and Hippocrates, and, in all probability, for centuries before their period. Galen described and named the laryngeal cartilages, gave an account of the muscles, and pointed to the glottic ligaments as the chief organ of the voice. We to-day are in the habit, in general, of talking of the larynx as the organ of the voice, and perhaps of implying indefinitely that the part came into being to serve the function of vocalisation. But teleological reasons for existence, although often and perforce admitted, cannot be estimated in terms of evolution, and it is well to be reminded that the larynx is not only the organ of voice, and to realise, from consideration of facts such as were brought forward in the Arris and Gale lecture by Mr. V. E. Negus (see p. 987) that it did not come into existence primarily as a sound-producer, nor was it evolved from its beginning in association with the growth of powers of vocalisation; it began life as a simple sphincteric valve at the entrance to the air-sacs or lungs, and it developed its other uses, by degrees, on top of its primary function. This way of looking at the larynx, of course, is not new, but Mr. Negus has brought forward some fresh matters which, as will be seen in his lecture, introduce new problems for consideration. The organ by means of which the voice is produced is undoubtedly the larynx, but many animals possess an instrument capable, to all appearances, of producing a range of tones like the human voice—yet they do not produce it. The difference between them and us lies, not in the instrument, but in the higher nervous connexions and the mentality, and the larynx is in reality but a structure which, owing to its convenient situation in the air-stream, has been utilised by the higher centres to serve this function in addition to its other and more primitive duties. It is interesting to note in this connexion that the human larynx is really a very simple structure. As in many other parts of the body, the brain has taken possession of a rather primitive instrument and has made it serve purposes which, without the guiding and governing brain, would call for much specialisation and intricacy of structure. Primitiveness and absence of specialisation are also of great value, almost of necessity, in the evolution of any organ up to the higher possibilities open to it. This primitive simplicity of the larynx, suggested at first by consideration of other types, becomes perhaps more apparent when we study its development. Mr. Negus has described the simple sphincter found in the primitive lung-fishes, and this simple sphincteric arrangement of developing muscle is found also in the young human embryo, surrounding the entrance to the air-way of the lungs. The sphincter is hardly disturbed by the formation of the cartilages; it is cut up into parts by their extension into it, but there is very little displacement of cells or fibres, and even in the adult larynx the sphincteric arrangement is still quite visible to those who look below the surface appearances of the muscles. The lower part of the larynx, the part below and including the glottis, is still primitively simple, and if its muscles do not act like a sphincter, it is only because the cartilages interfere mechanically with such an action. This is the part of the larynx more particularly concerned in voice production, the part which started its evolutionary career as a valve. The supra-glottic portion of the larynx is not derived from the walls of the air-tube, but is a modified part of the floor of the pharynx. Its development, away from the middle line, could have had nothing to do with the central and quite efficient valve, and its formation was a secondary and later one. Mr. Negus maintains that these pharyngeal structures were evolved in connexion with increasing efficiency in olfaction and deglutition after mastication. They are certainly of little direct value in phonation, although they may indirectly help in the performance of that function by relieving the region concerned of some of the burdens entailed by its more primitive duties. However this may be, it is of some interest to observe that the embryological and phylogenetic distinction between the lower and upper larynx has its reflection in the different lymphatic drainages of these two regions, as well as in other particulars. We cannot here follow Mr. Negus into many of the interesting possibilities which he has opened before us, but we may refer to one of these—the effect of the incomplete opening of the glottis in respiration on the intrathoracic pressure. The lessened intrathoracic pressure claimed as a result of this is no doubt an addition to that "negative pressure" which must exist normally in this region, as in the mediastinum, at all times. The naturally dilated condition of the thoracic œsophagus during life is an indication of this "negative" mediastinal pressure, and the alterations of pressure, described by Mr. Negus as producing certain effects on the pulmonary and aortic circulations, are perhaps to be regarded as curves of variation in the more constant and continuous effect which the mediastinal condition must produce on the venous inflow.

SODIUM SALICYLATE FOR ENCEPHALITIS LETHARGICA.

IN view of the prevalence of mild encephalitis at the present time, and the absence of any recognised successful form of treatment, the report of a case in a recent number of the *Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris* (April 10th, 1924) is of interest. A woman 21 years of age was admitted to hospital diagnosed as suffering from this disease, examination of the cerebro-spinal fluid revealing no abnormalities. An intravenous injection of 1 g. of sodium salicylate in a solution of 1 in 30 was given on the day of admission, and six days after the onset of the first symptom. Two days later the somnolence had disappeared and the headache, which had previously been very acute, was much less. The next day 2·65 g. were injected intravenously and salicylates were detected in the urine. The patient's condition remained satisfactory. Two days later, no further injection having been given, the somnolence had returned and was as marked as on admission, and the headache had reappeared. Myoclonic movements were beginning. Three grammes of sodium salicylate were thereupon injected intravenously, and within two hours the symptoms had disappeared. Attempts were made during the next few days to prevent the recurrence of symptoms by giving the drug by mouth, but without success, and recourse had to be made again to intravenous injections of 2·5 g. daily. After four more days all the symptoms had disappeared and they did not return after discontinuance of the drug.

THE MANCHESTER RADIUM INSTITUTE.

THE annual report of the work done at the Manchester and District Radium Institute during the last year has just reached us. The number of patients who presented themselves for treatment was slightly larger than in the previous year, being 829. Of these, 664 proved to be cases of malignant disease, while the remaining 165 suffered from various non-malignant diseases. During the same period a large number of radon plates and tubes were prepared by the physical staff attached to the Institute, and as some more radium has lately been purchased more emanation will be available for use next year. Dr. Arthur Burrows, radiologist to the Institute, states that 64 cases of malignant disease, exclusive of rodent ulcer, were rendered free from symptoms and signs of disease during the year. The result is satisfactory enough as far as it goes, but many of these cases can only have been treated within a few months of writing the report, and the question of permanent benefit must be judged after a longer interval of time. A laboratory for research has just been built and fitted up. This is a most important and necessary adjunct to any institute or hospital where the treatment of cancer is carried out with radium, and the two departments will be able to work in close conjunction.

Diathermy appears to give satisfactory results at Manchester, and is used in many cases of carcinoma, particularly in large fungating growths of the breast, tongue, and vulva. The method employed is to burn away as much as possible of the growth and then thoroughly to irradiate the surrounding tissues and the neighbouring lymphatic glands. Dr. Burrows states that after the main mass of growth has been excised by diathermy from the breast, he inserts radium tubes along the lymphatic channels into the axilla, with excellent results. He does not describe his technique for carrying out what must necessarily be a difficult procedure. We learn from the report that good results have followed the treatment of carcinoma of the tongue by the burying of unscreened emanation tubes into the growth, but no details are given as to the form taken by these tubes. Are they minute glass "seeds" which are inserted and then left indefinitely, or are they tubes which are removed after a certain period? Those who follow this procedure would need to know the strength of their radio-activity and the hours of exposure as well as something of the method by which the necessary millicurie dosage for any case is arrived at. No one will disagree with Dr. Burrows's statement that radium gives almost perfect results in the treatment of rodent ulcers, where there is no involvement of bone and cartilage; when this condition is present, he has found that the excision of the edges of the ulcer by diathermy followed by deep electro-coagulation was good procedure. The report discusses the important question of the treatment of carcinoma of the body of the uterus, for which condition operation is still considered best. For uterine hæmorrhage, other than that caused by carcinoma, Dr. Burrows aims at reducing but not completely suppressing menstruation. He reports several cases amongst his patients at the Institute of normal childbirth subsequent to radium treatment for menorrhagia. A young woman after five years of childless married life and a longer period of menorrhagia was treated with radium, regained normal menstruation, and over a year later gave birth to a healthy child. Whether the Manchester Institute is employing the methods now so strongly urged in Paris, Brussels, and elsewhere of treating carcinoma by small amounts of radium for very prolonged periods is not stated. Many practitioners now possess small amounts of the precious element, and it is to institutions such as this that they naturally look to for help and practical instruction in its use. In future reports they would welcome fuller details of dosage and screening technique.

VACCINES IN THE TREATMENT OF TYPHOID AND PARATYPHOID FEVER.

THANKS in part to its good water-supply and close supervision of its milk trade, Copenhagen is remarkably free from enteric fevers, and in 1922 only 19 cases of typhoid and paratyphoid fever were notified. This state of affairs is an eloquent tribute to preventive hygiene, and doubtless prevention alone will some day stamp out these diseases. In the meantime, we have to consider the best measures for treating these ailments as well as preventing them, and in this connexion a most encouraging paper has recently been published by Prof. Valdemar Bie,[1] of the Blegdams Hospital, in Denmark. He has given a typhoid vaccine to 13 cases of typhoid fever and six of paratyphoid B fever. The vaccine was made from an agar culture of typhoid bacilli, and was in most cases given by intramuscular injection, the doses on five successive days being 100, 200, 400, 700, and 1000 million typhoid bacilli. The diagnosis in the cases thus treated was confirmed by a positive Widal reaction or by the culture of typhoid or paratyphoid bacilli from the blood or fæces. The numerous charts showing the action of the vaccine on the temperature bring out one interesting point: whether the fifth and last injection was given as early as the thirteenth or as late as the fortieth day of the disease, it was almost invariably followed in a day or two by a fairly rapid fall of the temperature by lysis to normal. Only in one case did the temperature fall by crisis on the day following the last injection, and such a fall was not considered desirable on account of the risk of serious collapse, such as was often seen during the war in Germany and Austria as a sequel to intravenous injections of typhoid vaccine in cases of typhoid fever. The conversion in most of Prof. Bie's cases of a high, continuous temperature to one that fell by rapid lysis was associated with other signs of improvement, such as a return of the appetite and the cessation of diarrhœa. There was only one death in this series of cases, and in this case the patient was very weak and already suffering from pneumonia when the first injection was given on the twenty-second day of the disease. In another case the patient's recovery did not seem to depend on the vaccine, no response to which could be observed. The action of the vaccine being effective in both the typhoid and paratyphoid groups, it could not be regarded as specific, and Prof. Bie suspects that these cases were illustrations of the efficiency of non-specific protein therapy. Recently he has been treating cases of typhoid and paratyphoid fever with intramuscular injections of a staphylococcal vaccine, and the results were as good as with his typhoid vaccine. The success of prophylactic vaccination against typhoid and paratyphoid fever depending essentially on the specific properties of the vaccine, it is curious to find the specificity of a vaccine playing such an unimportant part when it comes to treating an already established infectious disease.

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[1] Acta Medica Scandinavica, 1924, lx., 95.

HÆMATOPORPHYRIN AS A SENSITISER.

THAT media of various kinds can be greatly sensitised by the addition of very small amounts of certain pigments has long been known to photographers—e.g., sensitising a photographic emulsion film by the addition of minute traces of eosin. Amongst hæmoglobin derivatives, the researches of Hausmann, Meyer-Betz, and others have increased our knowledge of the photo-dynamic action of hæmatoporphyrin, which acts as a remarkable sensitiser. A small quantity of this substance injected into white guinea-pigs renders them so sensitive that they die from exposure to light. Meyer-Betz injected into himself very small quantities of hæmatoporphyrin and after exposing himself to very moderate light made himself very ill. This sensitisation to light opens up an entirely new field in therapeutics. As a further development in this direction is the work of E. C. van Leersum on the influence of hæmatoporphyrin on the deposition of lime salts in the bodies of rachitic rats.[1] Rats were rendered rachitic experimentally by feeding them on a diet composed of gluten, maize, gelatin, common salt, and calcium carbonate after the manner adopted by McCollum. The animals presented all the well-known phenomena of experimental rickets—swelling and diminished consistence of the osteoid tissue of the long bones, the rosary in the ribs, and the characteristic changes between the epiphysis and shafts of the long bones, together with the imperfect deposition of lime salts in the osseous tissue. These rachitic rats were treated at intervals by injecting subcutaneously 3–10 mg. of hæmatoporphyrin in an alkaline solution. The results on these animals were compared with numerous controls, both by X ray examination during life and microscopic examination after death, as well as by a study of amputated hind legs before the hæmatoporphyrin injection was begun. Various tests were made to determine the influence of hæmatoporphyrin on the deposition of lime salts. The favourable action of the pigment both on albino and parti-coloured rats suffering from experimental rickets was confirmed. It is suggested that this substance produces a special sensibility for those light rays where photo-dynamic action in comparison with the ultra-violet rays is small and which are ineffective against rickets, that there is a sensitising action of hæmatoporphyrin during the whole experiment while the animals are confined in a badly lighted room.

TOXIC EFFECTS OF LOCAL ANÆSTHETICS.

FOLLOWING on the discussion which recently took place in the Section of Therapeutics of the Royal Society of Medicine on the dangers arising from the simultaneous use of adrenalin and novocaine, a report of an investigation instituted by the American Medical Association into the occurrence of accidents from the use of local anæsthetics, which has just been published [2] is of some interest. A committee, on which all branches of medicine and surgery were represented, collected from replies to a questionnaire sent to members of the American Medical Association no less than 43 cases of deaths following local anæsthetics, all of which occurred in the course of three years. The findings and recommendations of the report are based on a careful analysis of these cases, and they bring out several points of importance. The majority of the deaths (26) were due to cocaine; butyn and apothesin were each responsible in four cases, and alypin, novocaine, and stovaine each in one or two. The symptoms produced were in all cases very similar, consisting in dyspnœa and arrest of respiration within a few minutes of the administration of the anæsthetic. The only useful method of treatment, in the opinion of the committee, is artificial respiration, perhaps accompanied by massage of the heart, while the use of morphine or adrenalin is definitely contra-indicated. The cause of the accidents was in almost all cases the use of unnecessarily large amounts of the anæsthetic, so that while the committee are aware of the possibility of individual idiosyncrasy playing a part in such cases, and of the existence of evidence suggesting that the simultaneous use of adrenalin heightens the toxicity of local anæsthetics, they are convinced that greater care in the matter of dosage and in the observance of certain rules will largely eradicate accidents. Thus it was striking that very few serious accidents have occurred in large hospitals. They recommend (1) that cocaine should not be injected into the submucous tissue or subcutaneously; (2) that cocaine paste should never be used; (3) that local anæsthetics should not be injected into the urethra where trauma or stricture exists; (4) that the following concentrations be regarded as safe: cocaine, in the mouth and epipharynx, 5 per cent.; in the nose, not over 10 per cent., and in total amounts of from 10 to 15 minims containing 1 to 1·5 gr.; in the eye, not over 5 per cent.; in the larynx and bronchi, not over 20 per cent. (preferably 10 per cent. in two applications), and not over 15 minims total. Novocaine should not be used in greater concentration than 1 per cent.; apothesin, not greater than 2 per cent. Butyn should not be used for injection. With reference to the use of adrenalin, in conjunction with cocaine, not more than 10 minims of 1 : 10,000 are permissible, and in conjunction with novocaine not more than 15 minims of 1 : 1000. The committee state that the result of their investigation has convinced them that accidents from the incautious use of local anæsthetics are common in medical and dental practice in America. Their report, written as it is with judgment and care, should be of assistance in lessening such occurrences.

MALARIA AND RHEUMATISM.

DR. L. Lichtenstein,[1] of Bad Pistyan, remarks that it is of historical interest that at a time when malaria was supposed to be due to miasms acute articular rheumatism was also attributed to the same cause. Some writers, such as Haygarth, regarded acute articular rheumatism as a masked form of intermittent fever. This view was based on the tendency of both diseases to arise in low-lying damp localities and in certain climates to last for a very long time, and to be cured by certain specifics. Shooting pains in the muscles, dull pains in the knees, tenderness of the tibiæ, and aching in the sacral and lumbar vertebræ have long been known to be frequent accompaniments of an acute attack of malaria, but only a few cases have hitherto been recorded of malaria being complicated by polyarthritis. According to Fayrer, articular rheumatism is a frequent complication of malaria in Indian natives, but is not, like ordinary rheumatism, followed by endocarditis. Dr. Lichtenstein's experience is based on 21 cases of malaria complicated by polyarthritis. He divides the cases into two groups, the first comprising three cases in which polyarthritis developed in the acute stage of malaria, and the second group consisting of 18 cases in which it occurred in convalescence. In the first group the polyarthritis appeared on the fourteenth day and was not affected either by quinine or salicylates. In the second group, which consisted of 10 cases of benign tertian, 3 of quartan, and 5 of malignant tertian, the signs of acute articular rheumatism developed from two to six weeks after the last attack of malaria. In six cases the polyarthritis was afebrile and in 12 accompanied by fever, which was sometimes high or characterised by irregular remissions or intermissions. In almost all cases the knee-joints were affected either alone or in association with the shoulder- and ankle-joints. The fingers and toes were never involved. The blood showed no malarial parasites during the presence of polyarthritis. Quinine and salicyl preparations which were usually combined caused some improvement, but had no remarkable effect. The course of the disease was usually protracted, and more or less severe changes persisted in the joints until they were relieved by thermal treatment. Dr. Lichtenstein is of opinion that the polyarthritis is of malarial origin owing to the date of its occurrence, and also because no organ in the body is unaffected by malarial toxins. The fact that the complication does not yield to quinine or salicyl preparations is no objection to this view, as there are plenty of cases of malaria that do not react to quinine and of acute articular rheumatism that are not affected by salicylates. There is, therefore, no justification for denying the existence of a malarial rheumatism.

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[1] Nederland. Tijdschr. v. Geneesk., vol lxvii., No. 19, 1923.
[2] Jour. Amer. Med. Assoc., 1924, lxxxii.. 876.

[1] Weiner klinische Wochenschrift, 1924, xxxvii., 315, 316.

THE INCUBATION PERIOD OF GENERAL PARALYSIS.

THE factors determining the outbreak of general paralysis are still so imperfectly known that a statistical investigation of this subject by Dr. Fritz Wiesel [1] is opportune. It has been suggested that the outbreak of this disease may be influenced by the behaviour of the original syphilitic infection—e.g., by its response to specific treatment, and that such factors as heredity—i.e., a family history of insanity and diseases of the central nervous system—degenerative stigmata, alcoholism, injuries to the head, influenza, over-exertion, and psychic strain may play an important part in hastening, or even determining, an outbreak of general paralysis. Another teaching, associated with the name of Dr. R. Stern, is to the effect that persons with a fragile build are predisposed to tabes, while fat, muscular, and robust persons are predisposed to general paralysis. Dr. Wiesel's researches provide little support for these ingenious correlations. His material consisted of 188 cases of general paralysis observed in various Swedish hospitals in the period 1907–20. In all these cases information was obtained as to the date when syphilis was contracted. In two cases the incubation period of the general paralysis was as short as two years; the longest incubation period was 39 years. Most of the cases developed from 10 to 20 years after infection, but there were as many as 51 cases, or 27 per cent. of the total, in which the incubation period was longer than 20 years. In 36 cases, or 19 per cent. of the total, it was under 10 years. The average length of the latent period was 16·6 years. As for the many different factors which are supposed to determine the outbreak of general paralysis, Dr. Wiesel could find none, with the possible exception of bodily over-exertion, psychic injuries, and influenza, which bore more than an incidental relation to the development of the disease. A record of relapses of syphilis of the skin and mucous membranes could not be correlated with any peculiarities in the subsequent general paralysis or its incubation period, and the age of the patient when syphilis was contracted, the patient's sex, and the vigour with which mercurial treatment had been pushed, were also factors the bearing of which on the development of the paralysis was obscure. But it seemed that when the incubation period was short the paralysis often proved fatal in a comparatively short time. In nine cases, in which the incubation period was only two to five years, the average duration of the paralysis, from its outbreak to death, was between 12 and 13 months. Though most of the findings in this paper are in a sense negative, it has served a useful purpose in clearing the ground for a careful and systematic study of a disease whose many natural riddles have been unnecessarily complicated by physicians with a flair for speculation rather than with a capacity for painstaking observation.

THE INNERVATION OF DENTINE.

THAT the dentine of the teeth is sensitive is a clinical fact familiar to all who have sat in the dentist's chair. The actual cause of this sensitiveness has been the subject of much speculation and investigation, until the discoveries of Howard Mummery in 1912 and succeeding years showed that the nerves of the dental pulp terminated in arborisations round a layer of nerve cells close to the margin of the pulp. The axons of these cells pass into the tubules of the dentine and have been traced as far as the junction of the dentine and enamel. Recently Mr. Mummery has shown that the nerves of the pulp in their course give off vaso-motor fibres to the arteries. In a paper read before the Odontological Section of the Royal Society of Medicine on April 28th he discussed the present state of our knowledge on this subject, and in order to make conviction more complete showed the original sections under the microscope. Sections of such delicacy as these are easily damaged, but there is no doubt that to those used to microscopical work the examination of the sections themselves carries with it a satisfaction and conviction lacking in drawings or micro-photographs. Though the majority of competent histologists have long since accepted the accuracy of Mr. Mummery's work, an occasional note of scepticism has been heard. We imagine that doubt can be no longer possible to those who were present at the reading of the paper and had the opportunity of examining for themselves the original preparations, and, with finger on fine adjustment, of tracing the course of the delicate neuro-fibrils from the pulp into the dentinal tubes.

UNUSUAL ACCIDENTS WITH ANÆSTHETICS.

Two accidents, both unusual but neither of them unprecedented, have recently been reported in connexion with two of the safest anæsthetics—nitrous oxide and ether. They point the moral that in handling narcotic drugs—even those least easily associated with danger—care must be detailed and unremittent. The accident with ether resulted in severe burns to two individuals in the operating theatre. According to the press account the anæsthetic had been successfully administered *when a spark* from some electrical apparatus exploded a bottle of ether with great force. The ether burst into flames and the theatre was set on fire. This account is probably faulty in detail, for it is not easy to conceive of a closed bottle of ether being exploded by an electric spark. If the bottle were spilt, then, of course, the mixture of ether vapour and air which would be present might easily be ignited by an electric spark and might burst into flame with a detonation. One case has already been recorded in which vapour of ether and oxygen was thus "exploded" by the small electric globe of a laryngoscope. And on several occasions ether has burst into flame when a mixture of its vapour and air has been allowed to meet an open fire or a gas jet. In the case we are referring to, it is conceivable that the bottle of ether was in some place where it became hot enough for the ether to boil and burst the bounds of the bottle. Then it could have been ignited by the electric spark. Ether boils at a temperature of 96° F., and it is easily conceivable that this temperature might have been found in the immediate neighbourhood of a steriliser or heating apparatus. The other accident was unhappily fatal. It befell a student who was in the habit of trying the effect of nitrous oxide on himself. No solitary experiment should ever be made with a narcotic, even so apparently safe a one as nitrous oxide. For if unconsciousness supervene mechanical circumstances may render recovery impossible in the absence of immediate aid. This is probably the explanation of the rare deaths through nitrous oxide taken in solitude. When unconsciousness came through inhaling the gas the unfortunate experimenter, instead of letting go the apparatus and falling away from it, when recovery would rapidly ensue in all probability, most likely fell in such a position that his mouth and nose were pressed into the face-piece, resulting in fatal asphyxia. A similar accident was reported not long ago, when the position in which the body was found in relation to the apparatus pointed unmistakably to this explanation.

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[1] Hygiea, 1924, lxxxvi., 145.

THE DRINKING OF WATERS.

MEDICAL hydrology first began to receive serious consideration for the treatment of disease in this country more than two centuries ago; it is now slowly gaining a place in scientific medicine and becoming a recognised part of therapeutics. As regards both the internal and external application of natural mineral waters the indications for treatment have become more precise and their method of application more exact. No doubt the indiscriminate use of hydro-therapeutic measures, in which the choice of spa was often decided less by the suitability of its waters to any particular case than by the personal tastes of the patient, has delayed hydrology from taking its proper place in the esteem of the medical profession. The amenities of spa life, both social and climatic, are many—some of them are set forth in the notes on French Spas which appear on p. 1037—and exercise a beneficent influence irrespective of the water cure, but in our time it is only when combined with scientific application of the waters that they can command the whole-hearted approval of the medical world. The drinking of water, apart from the consideration of its specific mineral content, requires in many disease conditions to be carefully regulated to the needs of each particular case, and in our columns this week Dr. P. L. Violle, of the Institute of Hydrology in Paris, gives an account of the physiological tests he employs to determine the fate of liquids ingested by patients suffering from cardiac, renal, and cardio-renal affections. Such knowledge, as he points out, is indispensable in establishing the conditions under which absorption, diffusion, and elimination may be most efficiently accomplished, and in consequence how the dosage and nature of the liquids may be regulated. From the results of his fractional diuresis tests Dr. Violle draws definite conclusions for the regulation of liquid intake in certain pathological states. It is work of this nature carried out in the laboratory which is needed to supplement the existing knowledge of the therapeutic properties of spa waters in order that the maximum benefit to the patient may be obtained. Hydrology is but little studied in this country, although some consistent efforts are being made to supply the deficiency. In our news columns this week will be found a brief account of the second course of study under the auspices of London University, this time with practical demonstrations at Bath. During the coming week-end the new natural mineral water baths will be opened at Buxton. There is admirable equipment at our home spas for the study of hydrology, as it has been studied at many places on the continent, and Dr. Violle's paper shows one direction in which good work can be done.

THE summer session of the General Medical Council will commence at 2 P.M. on Tuesday, May 27th, when the President, Sir Donald MacAlister, will take the chair and give an address. The Council will continue to sit from day to day until the termination of their business.

THE Royal College of Physicians of London decided last week to discontinue the language test at the examination for the Membership. This test consisted in rendering into English two passages, one in Latin or Greek, the other in French or German. While the test acted as a deterrent to some otherwise suitable candidates, it could hardly be seriously regarded as evidence of scholarship, and therefore it has been discontinued rightly. Credit will still be given to those who desire to show real knowledge of languages, ancient or modern.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXI.

THE TREATMENT OF RENAL TUBERCULOSIS.

IT may be stated that in approximately 95 per cent. of all cases in which pus and tubercle bacilli are found in the urine the infection is renal in origin. The remaining 5 per cent. are accounted for by an ascending infection of the prostate and bladder in genital tuberculosis, by a process of elimination in miliary infections, and very rarely by primary tuberculosis of the bladder.

Before a definite line of treatment can be initiated a most careful investigation of the urinary tract must be made in order to fix the site and estimate the degree of infection present. The points to be elicited are as follows:—

(*a*) Abdominal examination may reveal an enlargement of one or other kidney with local tenderness; such symptoms may be due to disease, but it must always be remembered that the healthy kidney may have enlarged owing to more work having been thrown on it.

(*b*) Rectal examination often gives information of the extent of the disease, the points to be specially investigated being thickening of the ureters, and, in the male, involvement of the prostate.

(*c*) In the male careful examination of the external genitals should be made to disclose the presence of a primary or secondary epididymitis.

(*d*) Cystoscopic examination is essential in order to determine the presence of a badder infection, the location of the renal infection, and if one kidney alone appears to be infected the integrity and functions of the other kidney must be determined by ureteral catheterisation.

(*e*) A careful general examination of the patient must be made for the presence of active tuberculosis elsewhere than in the urinary tract.

Classification of Cases.

From the point of view of treatment cases may be classified as follows:—1. Unilateral renal infection, the other kidney being healthy, and with no infection of the lower urinary tract. 2. Unilateral infection with (*a*) secondary cystitis; (*b*) in the male, secondary infection of the epididymis on the same side; (*c*) associated nephritis or other non-tuberculous infection of the other kidney; and (*d*) associated active tuberculosis in some other part of the body. 3. Bilateral renal infection with or without secondary infection of the lower urinary tract or associated infection in other parts of the body.

Uncomplicated Unilateral Infection.—In Class 1, provided that the uninfected kidney is healthy and its excretory power is satisfactory, removal of the tuberculous kidney by lumbar nephrectomy should be performed, together with as much of the ureter as is possible through the same incision, if this shows evidence of infection at the time of operation.

Unilateral Nephritis with Complications.—In Class 2 (*a*) where there is a marked degree of bladder infection and irritability adequate examination often cannot be made until the bladder condition has improved. For this purpose complete rest in bed, together with tuberculin in small doses on the lines described below in the treatment of bilateral infections, should be tried. After six to eight weeks cystoscopy and ureteral catheterisation can usually be carried out under general or spinal anæsthesia, and, on proof having been obtained that the infection is unilateral, treatment is carried out as in the first class with, in addition, removal of the whole length of the ureter, if this is heavily infected, a separate incision being made for the lower part if necessary.

(*b*) When a unilateral infection is complicated by tuberculosis of the epididymis on the same side by spread of the infection from the ureter to the vas, the initial treatment is identical with that indicated above—i.e., removal of the tuberculous kidney and ureter. If the operation is followed by adequate after-treatment by tuberculin, &c., as given below, in the majority of cases the lesion in the epididymis will heal. Castration should be reserved for cases in which extensive destruction of the testis and epididymis has occurred from caseation.

(*c*) In a certain number of cases of unilateral renal tuberculosis the urine from the uninfected kidney is found to contain albumin and possibly casts—i.e., a condition of nephritis is present. A careful investigation of the renal functions as a whole by blood-urea examination, and of the uninfected kidney by colorimetric and other tests should be carried out before operation is undertaken. Each case has to be judged on its merits, and no hard-and-fast rule can be laid down as to operability if this complication is present. In cases of doubt sanatorium treatment, together with tuberculin, will often improve the patient sufficiently to allow a nephrectomy to be performed. In a number of cases nephrectomy is followed by a complete disappearance of the signs of nephritis which were toxic in origin.

(*d*) Associated tuberculosis in some other part of the body is no bar to operation in unilateral infections, provided such lesion is quiescent or healed. Active pulmonary tuberculosis must be considered as a contra-indication to operation, and the risks of lighting up the infection as a result of anæsthesia must always be remembered in quiescent lung lesions.

After-treatment of Cases Treated by Operation.

A fortnight after operation, while the patient is still in bed, a course of tuberculin injections should be commenced. The initial dose of tuberculin (B.E.) depends to a certain extent on the severity of the infection, on the general condition of the patient, and on the presence of associated tuberculous lesions. As a rule in an uncomplicated case the first dose may safely be 1/20,000 mg.; if no reaction results, the dose is increased each week until a maximum dose of 1/100 mg. is reached in about 12 weeks. In cases complicated by other tuberculous lesions the doses are necessarily smaller, and in any type of case the dose should be regulated so as to produce the minimal amount of reaction. The doses should be given at the same time of day, and a four-hourly chart should be kept for 36 hours after each injection to check the reaction.

As a rule, in an uncomplicated case, the injections should be continued for six months, longer periods being necessary in more severe conditions; during the later stages of treatment the fact that injections are being given is no bar to the patient resuming his ordinary occupation. Regular examinations of catheter specimens of urine should be made during convalescence, and treatment by tuberculin should be continued for at least two months after tubercle bacilli and pus have disappeared from the urine.

Apart from treatment by tuberculin, the general after-treatment of these cases is similar to that indicated for any other case of surgical tuberculosis, with the exception that it is generally advisable for the patient to live in a rather milder climate than that usually recommended. In this country the south and south-west are preferable to the east and south-east coasts, and extremes of temperature are always to be avoided. The duration of convalescent treatment depends on the severity of the initial infection, but it is advisable to regard three months as a minimum, after which, in an uncomplicated case, the patient may resume his ordinary avocation.

As a rule, steady improvement follows treatment on these lines, the patient loses all symptoms, gains in weight, and the bladder symptoms rapidly disappear. Occasionally persistent bladder irritability continues, when the methods indicated later under the treatment of bilateral infections should be tried; it is necessary to emphasise that on no account should the bladder be irrigated, as this does no good, and may do much harm owing to the risk of a secondary pyogenic infection.

Prognosis.—The operation mortality in nephrectomy for tuberculosis of the kidney is with modern conditions very low, being under 1 per cent. The end-results, as shown by statistics published in this country and abroad, and from personal experience, are extremely satisfactory; in uncomplicated cases a permanent cure can be expected in 85 per cent. of cases after operation.

Treatment of Bilateral Infections.

In Class 3, where the infection is definitely bilateral, operative treatment in nearly every instance is impracticable, apart from such relief as may be obtained by the aspiration of a large tuberculous pyonephrosis or similar palliative treatment. The removal of the most seriously affected kidney has been advocated in the hopes of prolonging the patient's life, but is rarely, if ever, justifiable. The only hope of improvement lies in general treatment, together with a prolonged course of tuberculin injections.

General treatment is best carried out on sanatorium lines, the patient remaining at complete rest for the first three months at least. Diet need not be modified with the exception of some limitation of nitrogenous intake in severe cases. Extra fatty foods are essential and cod-liver oil with malt in large doses is always useful. The chief symptom which requires treatment is the frequent painful micturition which is so commonly marked in these cases. Local treatment of the bladder by irrigation or instillation is to be avoided, as it does little or no good, and may be the cause of a secondary pyogenic infection. Hexamine and its derivatives are of little value and often increase the bladder discomfort. On the whole, the following prescriptions, which may be alternated from time to time, seem to give most relief:—

(*a*)

℞ Tinct. hyoscyami .. ♏xx.
Liq. opii sedativi .. .. ♏ii.
Potassii citratis .. .. gr. xx.
Aquam chloroformi .. ad ℥i.

One ounce to be taken three times a day after meals.

(*b*)

℞ Ol. santali, ♏xx., in gelatin capsules.

One capsule to be taken three times a day after meals.

(*c*)

℞ Methylene-blue, gr. ii., in cachet.

One cachet to be taken three times a day after meals.

(*d*) The introduction of a suppository containing morphine hydrochloride, gr. ¼, and ext. belladonnæ alcoholic, gr. ½, into the rectum at night will often give relief from the nocturnal frequency which is so distressing.

Tuberculin Treatment.—After three weeks' complete rest in bed injections of tuberculin (B.E.) should be started. The initial dose depends on the severity of the infection and the presence of associated tuberculous lesions; it should always be very small, and as a rule 1/500,000 mg. is suitable. Doses should be given at four-day intervals at first in very gradually increasing strengths until 1/50,000 mg. is reached, then at weekly intervals until 1/100 mg. as a maximum is being given. As a rule, the time taken to raise the dose to the maximum is six months, and if this plan is carried out no reaction should be caused; any definite reaction is an indication for an immediate reduction of the dose. Treatment by tuberculin, if definite improvement is obtained, should be continued for at least a year, and in many cases may be continued for a much longer period.

Prognosis.—Bilateral renal tuberculosis is rightly considered to be a very fatal disease, especially when occurring in children and young adults, but from experience gained during the last five years it has been found that with prolonged and careful sanatorium and tuberculin treatment in a certain number of cases there is a chance of prolonging life, and in a few cases complete cessation of symptoms and disappearance of tubercle bacilli and pus from the urine have resulted.

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Special Articles.

CERTAIN
OBSERVATIONS ON MALARIA MADE DURING TREATMENT OF GENERAL PARALYSIS.

Abstracted from a Communication made on May 15th to the Royal Society of Tropical Medicine and Hygiene, which will appear in full in the Transactions of the Society, Vol. XVIII., Nos. 1 and 2.

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Infections Produced by Inoculation.

Quartan Malaria.—On July 21st, 1922, two cases of general paralysis were inoculated from a case of quartan malaria contracted in West Africa. Both cases became infected, parasites being found in the peripheral blood within three weeks, and from these cases two others were successfully inoculated. All four cases were treated after the fever had lasted from three to five weeks with quinine in solution, gr. 30 orally, daily for two months; parasites disappeared from their blood in from four to seven days, the fever speedily subsided and no relapse, either febrile or parasitic, occurred.

On Nov. 25th, 1923, two other cases of general paralysis were inoculated with quartan parasites from an old-standing, naturally infected patient. No sign of infection was apparent up to Jan. 3rd, 1924, and it was assumed that the inoculations had failed, and one of the two patients was reinfected by the bites of *Anopheles maculipennis* infected with *Plasmodium vivax.* This case is of interest in connexion with the unicity theory of the malaria parasites, and will be referred to later.

Malignant Tertian Malaria.—One case inoculated with the blood from a patient suffering from malignant tertian malaria developed an infection of a fulminating character and the disease terminated fatally.

Simple Tertian Malaria.—As it was considered more desirable to work with simple tertian malaria, no attempt was made to carry on the strain of quartan or malignant tertian parasites. On Sept. 8th, 1922, a case of general paralysis was inoculated with simple tertian malaria. From this patient a long chain of cases of general paralysis has been infected with the result that during the last 20 months the strain has been transmitted by direct subcutaneous inoculation through 23 passages comprising 70 cases; of these 70 cases, five failed to become infected at the first inoculation. In addition to the cases in this chain, 28 other cases were inoculated either from naturally infected malaria patients or from second inoculation passages, and of these four failed to become infected at the first inoculation. The incubation period showed considerable variations, but was for the most part between 8 and 15 days. In four of the 98 cases the malarial infection underwent spontaneous cure in from 5 to 14 days; no relapse occurred. Of 61 cases treated with quinine orally for two to four days, practically all with quinine in solution, gr. 30, on each of three consecutive days, only one relapsed during an observation period which varied from 4 to 18 months, except in a very few cases in which it was between 2 and 4 months. Of 13 cases treated with the usual three-day course of quinine, gr. 30, on each of three consecutive days, and subsequently with two or three injections of small doses of novarsenobillon, only one relapsed during an observation period varying from 5 to 12 months. One case treated by two small doses of novarsenobillon only has not relapsed during an observation period of eight months.

A number of observations were made in order to ascertain whether by the administration of small daily doses of quinine for a short period before, and after, the inoculation of virulent blood it was possible to obtain a modified infection which might prove of equal value to the ordinary severe infection in the treatment of general paralysis. In eight cases to whom an oral dose of 10 gr. of quinine was given for varying periods before and after inoculation the development of infection was prevented during an observation period varying from 5 weeks to 4 months.

Infections Produced by Mosquitoes.

In certain cases it was considered desirable to infect patients by the bite of mosquitoes instead of by direct inoculation of infective blood. The mosquitoes used were mainly *A. maculipennis* infected with *P. vivax* by feeding on patients. The intensity of infection observed in mosquitoes fed on the same patient at the same time was fairly constant, but the degree of infection varied considerably among different batches of mosquitoes. It seems probable that these differences in intensity of infection are due not to any variations in the mosquito, but rather to the state of the patient's blood at the time the insects fed. When blood films made at the time of feeding showed the presence of many large and apparently full-grown gametocytes, the resulting infection in the mosquitoes was intense and a large proportion was found to be infected. The feeding of a mosquito which on dissection immediately after the meal was found to contain sporozoites in its salivary glands, in our experience, never failed to result in infection of the patient. However, the mosquitoes were always used for producing infection within a period of from 12 to 30 days after the infecting feed. We did not attempt to investigate the question how long they remained infective or how many persons it was possible by successive feeds to infect from one mosquito, but it was observed on the few occasions where an infective mosquito was fed successively (within the periods mentioned) on three or four patients infection always resulted. Of 41 cases, 39 were treated with the usual short course of quinine—i.e., gr. 30 in solution on each of three consecutive days. Six died shortly after treatment without parasites in the blood, and two about a month after treatment without having relapsed. Of the 31 cases who survived, four (13 per cent.) have relapsed within an observation period varying from two to six months. The other two cases were treated with several small doses of novarsenobillon and both of them relapsed.

Reference has already been made to the prophylactic action of quinine in inoculated malaria. It was decided to repeat these observations with the mosquito-borne strain, not only for the reasons given previously, but also because anopheles capable of spreading malaria are known to exist in the grounds of many of the mental hospitals in this country, and it seemed desirable to ascertain whether, if necessary, the inmates of the mental hospitals and the general public in the neighbourhood could be protected against accidental infection by quinine administered as a prophylactic.

It was found that when even small daily doses (5 gr.) were continued for two to six weeks after inoculation protection was given, but even large doses given before inoculation failed to protect unless they were continued for a considerable time after inoculation.

Unicity Hypothesis of Malaria Parasites.

Even up to the present time a number of authors adhere to the view that there is only a single species of malaria parasite found in man. The following observations made in the course of this work appear to render the unicity hypothesis untenable. 1. In six patients inoculated between July and November with *P. malariæ* only forms typical of this species appeared in the blood. 2. In one patient inoculated in July with *P. falciparum* only forms typical of this species appeared in the blood. 3. In 98 patients inoculated at all periods of the year with *P. vivax* only forms typical of this species appeared in the blood. 4. In 41 patients infected between September, 1923, and April, 1924, by the bites of *A. maculipennis* or *A. bifurcatus* infected with *P. vivax*, only forms typical of this species appeared in the blood. This observation appears to us to be particularly important in view of the statement, frequently to be found in French literature, that primary infections are malignant tertian. 5. Finally, as already recorded, a case was inoculated with *P. malariæ* from a naturally infected patient on Nov. 25th, 1923, and as he had not shown parasites in his blood or exhibited any symptoms of malaria by Jan. 3rd, 1924, was subjected to the bites of mosquitoes infected with *P. vivax*. This patient showed *P. malariæ* for the first time in his blood on Jan. 8th, and *P. vivax* for the first time on Jan. 18th; both parasites persisted in the blood up to the time of treatment.

Effect of Numerous Direct Passages of P. vivax Through Man.

It is now well recognised that many trypanosomes pathogenic to man and stock undergo a marked increase in virulence to certain species of laboratory animals when maintained in them for long periods by direct inoculation from one host to another. In some cases—e.g., *Trypanosome brucci* vel *T. rhodesiense*, this alteration of virulence is attended by certain morphological changes. It is important, however, to note that such changes do not occur in the early passages, but apparently take place only after the strain has undergone a certain number of direct passages through the vertebrate host. It is therefore of considerable interest and importance to inquire whether the prolonged sojourn of *P. vivax* in the human host, comprising 23 direct passages from man to man without the intervention of the insect intermediary during a period of nearly two years, has had any influence on the parasites or on the type of infection which it produces.

Comparisons between the types of infection, temperature charts, and clinical signs in patients infected early and those infected after several passages indicate that the strain had undergone no increase in virulence during its direct passage from man to man through 23 generations, nor does the morphology of the parasite appear to undergo any change after many passages.

Susceptibility of Induced Malaria to Treatment.

The observations of previous writers, that general paralytics who had been infected with malaria by inoculation were easily cured by comparatively short courses of treatment with quinine and salvarsan or with quinine alone, have been confirmed by us. On contrasting the results of treatment of inoculated cases with those obtained in the treatment of simple tertian malaria during the war and in ordinary practice, one cannot fail to be impressed by the striking difference, especially in the percentage of relapses.

Various hypotheses have been advanced to explain the remarkable sensitiveness of the *inoculation-strain* to quinine treatment. It appears to us that the true explanation of the success of treatment in these induced infections is to be sought in the fact that we are here concerned with the early treatment of disease, or, in other words, with the treatment of primary infections, and not, as in the war or as frequently in practice, with old-standing relapse cases.

The Mechanism by which Cure is Obtained in Malaria.

In endeavouring to explain why a cure is sometimes effected and sometimes not, we commence with the assumption that no form of quinine therapy per se ever destroys all the malaria parasites in the human body. In the treatment of malaria, the train of events is, in our opinion, as follows. Quinine given to a patient whose blood contains numerous malaria parasites invariably destroys directly, or more probably indirectly, large numbers, but not all of the parasites, thus setting free a considerable quantity of soluble antigen. The antigen provokes by stimulation of the host's tissues the formation of immune-body. The immune-body, if present in sufficient amount, destroys the remaining parasites, thus resulting in sterilisation of the infection and the cure of the patient. For a cure to be obtained, this hypothesis demands, first, the setting free of a considerable quantity of soluble antigen by the destruction of a large number of parasites, and, secondly, a capacity on the part of the host to respond to the antigen by the formation of a sufficient quantity of immune-body. If for any reason either of these two requirements is not satisfied, the infection is not completely sterilised and a relapse occurs. With regard to the first of these two requirements, we have long been impressed with the fact that the administration of quinine when the blood contains numerous parasites is more efficacious than its administration when the blood is free from parasites. The second requirement for the production of a cure is that the cells or tissues of the host shall be able, in response to the antigen stimulus, to produce a sufficient quantity of immune-body. That the human host exhibits a certain degree of natural immunity to malarial infection and that this is capable of being increased in response to the proper stimulus there can be little doubt.

There is, in our opinion, a considerable mass of evidence indicating that man exhibits some degree of immunity to malaria and that this is capable of being increased in response to the proper stimulus. His natural immunity is but slight, and in the vast majority of cases insufficient to prevent the development of the infection; in patients who have recovered, either spontaneously or after medication, from an acute attack of the infection the immunity may be increased to such an extent that it may be impossible to reinfect for various periods, which are probably much shorter in the European than in the native; and finally, in cases where the symptoms have subsided spontaneously, without the complete disappearance of parasites from the blood, reinfection by the feeding of infective mosquitoes does not result in an exacerbation of fever. The immunity is, however, relatively slight, and there is evidence that the malaria parasites readily develop an immune-body resistance. It is important to note that immunity developed against one species of plasmodium does not confer a similar protection against the other species.

We consider that there exists considerable evidence in support of the hypothesis that the essential factor for the production of cures in malaria is the capacity of the host to produce immune-body in response to the antigen formation resulting from the destruction of a considerable number of parasites by a medicament. When for any reason the host is unable to produce immune-body in sufficient amount, sterilisation does not take place and a relapse occurs. We surmise that certain individuals are unable to produce a sufficiency of immune-body to sterilise the malaria infection owing to ill-health at the time of infection and treatment or possibly owing to a personal idiosyncrasy, and that these are the patients which develop eventually into chronic relapse cases. The immune-body produced in such cases is insufficient to destroy all the parasites which have escaped the action of the quinine; the parasites which persist gradually acquire an immune-body resistance, so that the relapse strain, although reacting to quinine as usual, is not completely destroyed by immune-body.

Quinine Prophylaxis.

Observations on the value of quinine prophylaxis showed that administration of the drug before infection is useless, that its administration must be continued for at least 10 days after the infecting feed to prevent infection from developing, and that the daily dose given has but little influence apart from the fact that with very large doses (30 gr.) the period for which the drug has to be given to prevent development of infection is a little shortened. It is concluded from these observations that quinine has little, if any, action on sporozoites, and that the mechanism by which development of infection is prevented is similar to that by which a cure is effected.

Value of the Malaria Treatment of General Paralysis.

Up to the time of writing a sufficient period has elapsed to enable a judgment to be formed regarding the effect of the malaria treatment in respect of 84 patients suffering from general paralysis. In presenting these results we have relied on the judgment of the medical officers in charge of the patients at the various mental hospitals. Of the 84 patients treated 14 have died, most of them immediately, or shortly, after the completion of the course of malaria treatment; although all these cases had been treated with quinine before death and parasites had disappeared from the blood, nevertheless it is impossible to affirm that in none of them was death accelerated by the malaria. No noticeable change in mental or physical condition has been observed in 20; with regard to these cases, however, it is to be borne in mind that in the ordinary course of events many of them would now be dead. In ten there is definite physical improvement, but no change in the mental condition. In 17 there is great physical and distinct mental improvement. Finally, in 23 the mental and physical improvement has been so great that the patients have been, or are about to be, discharged from the mental hospitals. In a number of the cases the improvement has been maintained for many months—in some for as long as a year—and quite a number are back at their old occupations. As time goes on, it may be found possible to discharge still others of these 84 cases for, as Wagner-Jauregg writes, "The maximum of the improvement does not manifest itself at once at the end of the period of fever but does later. On the contrary, the improvement continues often for a long period, so that in many cases the result seemed to be an incomplete one where later however a complete remission came to pass." Whether the improvement is temporary or permanent only time can decide, but the results already achieved can only be regarded as remarkable when it is realised that no patient suffering from general paralysis had previously been discharged from the mental hospitals in question.

THE WILLIAM DUNN LABORATORIES.

On Friday in last week Lord Balfour, Chancellor of the University, opened at Cambridge the new William Dunn Laboratories for the study of biochemistry.

The magnificent donation to the University of £210,000 from the estate of the late Sir William Dunn reached the University by a series of fortunate accidents, for the residue of this city merchant's great fortune was left in the hands of trustees to be used for the "alleviation of human suffering," no more precise directions being given. The executors of the will were the directors of the Commercial Union Assurance Company, who appointed a small committee to assist them in the responsible task of allocation, and the accidents referred to were the various circumstances which led to the decision of this committee before whom so many and various opportunities of benefiting mankind were unrolled. The final recommendation of this body was that a well-equipped and thoroughly modern building for the study of biochemistry should be erected at Cambridge, and Lord Balfour, in accepting the great gift in the name of the University, indicated in a convincing way how the developments of biochemistry are being now employed, with a promise of still greater employment in the future for the arrest and prevention of disease.

The Buildings.

The new laboratories are situated on the east side of Tennis Court-road, on part of the old park of Downing College and in immediate proximity to the science schools. They form a handsome block of three stories, having at the top a large general laboratory, and below a quantity of smaller rooms elaborately equipped for carrying out any procedure cognate to research in biochemistry. There is also a large library, which has been made the subject of a most generous donation of £2000 from Sir Jeremiah Colman, the chairman of the Dunn Trustees.

The opening of the laboratories formed but a brief ceremony. Sir Jeremiah Colman, with whom were his co-trustees, the Hon. A. H. Holland-Hibbert, Sir James Leigh-Wood, and Mr. C. Seligman, formally handed over the buildings to the Chancellor, congratulating his old University on having obtained the prize in a field where there had been keen competition, a result which he attributed to the high position which the medical school of the University had made for itself.

The Progress of Biochemistry.

Lord Balfour, in receiving the gift of the laboratories, said that the problems of disease could be approached and were being steadily solved in certain directions along lines of pure chemistry and pure physiology. But he showed that research along the double track of biochemistry held out a more than double promise, chemical research with a biological basis offering infinite possibilities for fruitful discovery. He congratulated the trustees of Sir William Dunn's estate upon the business acumen which had brought about appreciation of this fact, and upon the wisdom which had prompted them to endow research in order that efforts for the alleviation of human misery might be directed by theories having behind them broad and intensive experimental study. On the breadth of sound research he laid especial stress. Taking malignant disease as a typical example of a widespread source of human misery whose origin was as yet unexplained, he hazarded the conclusion that when the causes of cancer became known, so that effective measures of control or prevention could be taken, this splendid consummation would be the result of a discovery made with no special consideration of the phenomena of morbid growths, but one which opened up some generalisation which in its turn would shed a flood of light upon the accumulated knowledge of generations of medical observers. He concluded by expressing his confidence in the leadership of Prof. Gowland Hopkins, the devotion of his collaborators, and the promise held out by the great work of biochemistry now proceeding in the Cambridge school.

A Dinner to the Trustees.

In the evening a dinner was given in honour of the trustees at Trinity College, the Master, Sir J. J. Thomson, presiding. The Chancellor, the Vice-Chancellor, many heads of houses and professors, as well as a representative group of guests were present to meet the trustees.

PARIS.

(From our own Correspondent.)

Hospital Ventilation.

To maintain the air of a hospital ward as closely approximate as possible to the exterior air, provision must be made for continuous ventilation so that the air of the ward is renewed three times in the hour, and although it is easy to preserve an equable temperature during the winter, it is a more difficult matter in summer. Dr. Jules Renault recently demonstrated to the Academy of Medicine the apparatus which he used to maintain the constant ventilation of his wards in the Hospital San Louis (Grancher Annexe) by warm air in winter and cool air in summer, with an adequate percentage of moisture at all seasons. The installation is designed as follows: in the basement there is fixed an intake pipe and two pieces of apparatus which regulate the temperature and humidity: in the ward there are distributing pipes for the fresh air, exit pipes for the foul air, a regulating switch-board, and a registering thermometer and hygrometer. The intake opening is situated about two metres above the ground in the courtyard and is furnished with a retaining-box for dust, containing a filter of about 40 cm. in thickness and composed of a series of sieves of woollen mesh placed at suitable distances one on top of the other. This removable filter retains all its properties for several months without causing any appreciable resistance to the passage of the air. It needs only to be cleaned twice a year. Further, an electric fan allows the intake of air to be conveniently regulated. The fresh air is driven through a large casing which divides into two smaller casings passing through the basement, and terminating in the regulator apparatus. This is composed of (1) a radiator to heat the air, formed of copper tubing through which steam at a very low pressure passes. (2) A radiator for the cooling of the air, larger in size and placed at the lower part of the apparatus and also formed of copper tubing, through which passes a current of cold water from the town main at a temperature of about 13° C. A two-way valve worked from the switch-board in the ward permits the air to be directed either through the heating apparatus or through the cooling apparatus. (3) A moistening trough in which the air passes above water which is made to evaporate by steam at low pressure in a coiled tube. The amount of water evaporated varies with the area of the coil brought into contact with the water, and a switch on the switch-board allows this area to be altered at will. The treated air is then conducted by water-tight and properly insulated casings to four distributing outlets fixed along the walls of the wards. These outlets are constructed in such a fashion that the air exits from holes in the sides along the walls and does not blow directly down on the patients. The beds are placed in the middle of the ward in cubicles arranged around a central pillar. The air is withdrawn from the room from the upper part of the windows by means of three vents furnished with balanced aluminium valves which rise on positive pressure in the interior air. The movement of these valves shows clearly that the air passes out freely and that the ward is adequately ventilated. At any hour of the day or night the composition of the internal air is similar to that of the exterior air. The temperature is maintained in winter between 20° and 21° C., and in summer between 21° and 23° C., even when a thermometer placed outside indicates 30° C. The hygrometer reading varies during the year between 40 and 50 per cent. From the physiological point of view the air is maintained sweet and fresh. Finally, from the pathological point of view colds, bronchitis, bronchopneumonias become rare sequelæ in the wards in winter, and heat-stroke in summer is obviated.

The Medical Coupons Scandal.

The tribunal on those involved in the medical coupons scandal, details of which were set forth in my letter published in THE LANCET of June 16th, 1923, has now pronounced judgment. It will be remembered that on Sept. 23rd, 1923, following a long inquiry, several doctors were found guilty of swindling, their accomplices being chemists, presidents of associations of old soldiers, and agents. They had created a vast organisation in order to turn to their own profit the law which authorises payment by the State for medical care and drugs given to those wounded in the war. The swindle had gone on for three years on a grand scale, and it is estimated that the cost to the taxpayers approached 20 million francs. Eight doctors and four chemists and ten other persons were found guilty, several of the sentences being very severe. For example, one doctor was given two years' imprisonment, 3000 francs fine, and ten years' of interdiction from the practice of medicine. He was also ordered to pay 33,123 francs to the State, 2500 francs damages to the Union Fédérale des Mutilés et Blessés de Guerre, jointly with three other culprits, and one franc (corresponding to one farthing damages), to the Syndicat des Médecins de Marseilles. This appears to be the most severe sentence given to any of the medical men, whereas pharmacists and non-professional persons were given sentences more or less heavy. The president of the Union Fraternelle des Éprouvés de la Guerre is to be imprisoned for three years. No one in any country will fail to rejoice that such flagrant abuse of professional privileges met its deserts.

Evolution of Hepatic Cirrhosis according to Sex.

In making an analysis of the observations of cirrhosis of the liver recorded at the clinic of the Hospital of St. Antonine during the years 1922–23, Prof. A. Chauffard and Dr. Brodin found that in man the evolution of the condition differed from that in woman. In the man there was found the classic picture, with liver atrophy and recurring ascites, necessitating repeated tapping which resulted eventually in death from cachexia. In the woman, on the other hand, the liver was generally hypertrophied and the disease developed by spurts, showing occasional improvements varied by short relapses. Finally, after a longer or shorter quiescent period new features might arise, frequently acute tuberculosis. The cause of death in women was not a slow cachexia but hepatic insufficiency. This difference in development seems to be due to lower powers of resistance in the female liver against infections and intoxications, particularly that of alcohol.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Isolation of the Virus of Foot-and-Mouth Disease.

BEFORE the Microbiological Society of Berlin, as I have already informed you, Prof. Frosch, head of the bacteriological department of the Veterinary College, reported that he had succeeded in discovering the virus of foot-and-mouth disease, which hitherto could not be rendered visible by the ordinary optical methods. Together with Prof. Dahmer and Prof. Köhler, of the Zeiss works in Jena, he used ultra-violet rays to demonstrate the germ, which was then cultivated on a solid nutrient medium. It proved to be a bacterium of very small size. The author gave a report of the technique of his method and of the successful inoculations made with the virus. The discovery, which is of great scientific and practical value, is now being examined in the Robert-Koch Institute in Berlin.

Abortion in Germany.

The incidence of abortion has become very frequent in Germany. In the *Aertzliches Vereinsblatt* a country medical man states that the practice of inducing abortion, which hitherto was a prerogative of the cities alone, has now become widely spread among the rural population. He states that nearly as often as he ascertains pregnancy in a woman he is called a few days later to her because she is aborting; the midwives complain that the number of births has recently very much decreased. There exists indeed a society which delivers lectures throughout the country under the pretext of giving contraceptive information, and it is an open secret that they give such permissible advice, while they also teach pregnant women how to bring about miscarriages. The author wishes to draw the attention of the authorities to that society which, notwithstanding its harmless name, has illegal aims. The views of the correspondent are strongly opposed by a Berlin medical man who is known to be an active member of the Communist party and who declares that the abortion epidemic is caused by economical reasons only, mothers being afraid of becoming unable to procure food for the child. According to this Communist doctor, it is quite unreasonable to prosecute for induced abortion. In Russia the penalties for illegal abortion were abolished immediately after the revolution, and it became legal to interrupt pregnancy for economical reasons provided it was sanctioned by a State medical officer and performed in a State hospital within the first three months of pregnancy. Moreover, the Russian law provides that a pregnant woman shall be paid her full wages even if owing to her state she is able to do less work; she also receives her wages for two months after her delivery even if totally incapacitated for that time, and an extra benefit to enable her to buy things necessary for her child. Commenting on the present situation, the editor of the *Aertzliches Vereinsblatt* says that it seems unreasonable that the Russian law should permit induction of abortion for economical reasons when it supports women during their pregnancy and after the birth in such a lavish way as described by the correspondent. Germany ought to follow the example given by Russia in the care of pregnant women, but to decline to make criminal abortion lawful, even if performed by a State medical officer.

Insurance Practice in Britain and Germany Compared.

The many difficulties in insurance practice induced the Berlin Medical Chamber to inquire into the state of things in other countries. The Chamber therefore approached the British Medical Association for information and their request met with a friendly reception, as Dr. Cox, the secretary of the Association, sent to the Medical Chamber articles he had written on insurance practice in England in the *Journal of the American Medical Association.* These are printed in full in two issues of the official organ of the Berlin Medical Chamber under the title of "Seven Years of National Insurance in England." By special permission of the author and of the editors of the *Journal of the American Medical Association* it will also be published as a separate volume. The articles are of great interest, as they show that the principal feature of the English law from a medical point of view is that no medical man desiring to practise under the Insurance law is excluded from so doing, except for serious reasons. Also, the English law benefits a smaller part of the population than the German one, and that insurance work forms only a small part of the income of the average English doctor, whilst in Germany insurance practice is the principal and sometimes even the only source of income of most practitioners. The number of medical men doing work under the Insurance law, as quoted by Dr. Cox, is 12,850 of 24,000 medical practitioners residing in England, Scotland, and Wales, being about 55 per cent. This is a much smaller percentage than that of Germany, where only a few medical men are entirely independent of club practice. It is true that in the larger towns many medical men, particularly specialists, have consulting rooms for club patients outside their residence, or in their residence special hours for them, where they come not in touch with private patients. It certainly seems to be an advantage that club patients are in this way able to consult leading specialists under the club tariff; otherwise the middle classes under present financial conditions would be unable to get specialist advice. A great advantage of the English law is the determination and the payment of the fees by the Government, so that battles with the clubs and strikes are more easily avoided than in this country. The issue of the recent big medical strike in Germany is a warning example of the disadvantages caused by such incidents both to the medical profession and to the insured. It may be noticed that since my last letter the medical strike which had then ceased in the greater part of Germany has been called off in Berlin also. Both parties have come to an armistice until July 1st, the conditions being that the medical men will continue to attend club patients as private patients at moderate fees, but that those fees are no longer paid, as during the strike, by the patient himself but by the club to which the bills must be sent by the medical attendant. During the armistice both parties will enter into negotiations for a definite settlement of the system of medical attendance.

German Medical Men in Afghanistan.

The economic conditions of Germany have induced many medical men to emigrate into foreign countries where there seems to be some hope for them to earn a livelihood. As already mentioned in these columns, the Afghan Government some time ago had asked German medical men to settle in that country. Notwithstanding the warnings of medical men with experience of hot climates, a large party made the journey at their own risk from Germany through Russia to Afghanistan in the hottest time of the year, the result being that several members of the party died on the journey from malaria or dysentery, and a number of the survivors became seriously ill. In this connexion the *Leipziger Verband* warns medical men against undertaking private arrangements with foreign Governments without the assistance of the *Verband,* pointing out that the rush for such appointments is undignified and tends to lower the standing of the German medical profession. This is the more the case as the Afghan disaster is not the only one caused by the inexperience of German medical men, but that similar facts are reported from elsewhere.

Retirement of Prof. Gottstein.

Prof. Gottstein, the chief of the Prussian Medical Department, has retired from office, the law providing that all Government officers must do so on reaching the age of 65 years. Prof. Gottstein, who after the revolution had succeeded Prof. Kirchner, had a difficult task, as he took office at a time when Germany had just passed through the dangers of war and of revolution with the concomitant bad hygienic conditions. He did good work in arranging for the instruction of Government medical officers by instituting an academy for social hygiene, where he will continue to lecture after his retirement. His work in the care of tuberculous, venereal, and cancer patients respectively was made difficult by reason of the small sums the Treasury could spend for hygienic purposes. He will be succeeded by Dr. Dietrich, a senior member of the department.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg. Lieut. A. E. Phillips is transferred to the Permanent List.

J. A. Cusack and V. F. Walsh to be Surg. Lts.

The following appointments have been notified: Surg. Lt.-Comdr. (D.) W. E. C. Sampson, to the *Victory,* for R.N. Barracks, Portsmouth; Surg. Lt. (D.) H. J. Luck, to the *Warspite.*

ROYAL ARMY MEDICAL CORPS.

Capt. S. J. Barry to be Maj.

Capt. C. Russell retires receiving a gratuity and is granted the rank of Maj.

TERRITORIAL ARMY.

Maj. R. Phillips to be Lt.-Col. and to command the 47th (2nd Lond.) Casualty Clearing Station.

Capt. J. Kinnear to be Maj. (prov.).

Capts. A. L. Taylor (late R.A.M.C.), K. Simpson (late R.A.M.C.), and C. Shaw-Crisp (late R.A.M.C., Militia) to be Capts.

Capt. A. Rodd, R.A.M.C., to be Divl. Adjt. 43rd (Wessex) Divn., vice Capt. W. W. S. Sharpe, R.A.M.C., vacated.

Lts. C. H. A. Alderton and R. H. Hadfield to be Capts.

Sanitary Companies.—Lt. A. Massey (late R.F.A., T.A.) to be Capt. (prov.) with pay and allowances of Lt.

Supernumerary for Service with O.T.C.—Maj. C. E. Searle to be Lt.-Col.

ROYAL AIR FORCE.

G. P. O'Connell is granted a short service commission as a Flying Officer.

Flight Lt. (Hon. Squadron Leader) H. B. B. Greene relinquishes his temporary commission on ceasing to be employed and is permitted to retain the rank of Flight Lt.

INDIAN MEDICAL SERVICE.

The King has approved the grant of a temporary commission as Lt. to Capt. Shiva Shankar Gupta, late I.M.S., who relinquishes the rank of Capt.

BRITISH EMPIRE EXHIBITION, WEMBLEY:

HEALTH IN THE TROPICS.

> "This Exhibition . . . stands for the coördination of our scientific knowledge and a common effort to overcome disease . . . in many parts of the Empire."—H.M. THE KING.

II.

THERE are many aspects of medical service in the East which require consideration apart from general therapeutics. Among others is the provision of proper obstetrical aid, and in this connexion the photographs in the exhibition of Indian home nursing, as it is, and as it should be, give food for thought, the wonder being that the puerperal morbidity-rate is not a great deal higher. Religious pilgrimages are a source of great danger from the point of view of disease dissemination, and the illustrations of the elaborate arrangements made at various places, especially at Suakim, are worth seeing. Looking at the exhibits from Burmah and Arakan one does not envy the registrar his task if he has to prepare his reports from the chipped and coloured pieces of bamboo and wood that form the medium of registration of births and deaths in these parts.

In the light of what we hope will be a reawakened interest in the medical affairs of our many dominions it may not be out of place to present in a short form some of the reports in our hands from medical officers in a few representative parts of the Empire.

The majority of these deal with the year 1922, a few of them with the year 1923 in part or whole; they may be roughly grouped into three sections: (1) New Zealand and New South Wales; (2) certain African territories, mainly to the east of the continent; (3) the great tea and rubber districts of the Malay Archipelago, with which may be placed a report on the North-West Frontier of India.

(1)

The report from *New Zealand* is an excellent one, the only adverse features being a declining birth-rate and an outbreak of typhoid fever, the latter due to water pollution in the lava catchment area of Mount Albert. The outbreak was rapidly taken in hand and with a new main water-supply to the area the disease was eradicated. Dr. Truby King is the moving spirit in the infant welfare work, and the State-subsidised home nursing staff is increasing in numbers. The figures of the school inspection staff are interesting; in all 34,400 children were examined and the following defects found:—

		Per cent.
Dental defects		67·16
Defects other than dental—		
Postural and structural trunk and chest ..	26·03	60·40
Cervical glands	11·25	
Enlarged tonsils	11·23	
Subnormal nutrition	7·41	
Goitre	6·20	
Defective vision	3·18	
Defective hearing	0·79	

The infantile mortality-rate is 41·9, the lowest to be found in any of the reports and the best ever realised in New Zealand. There are many Maori health councils doing good work and receiving widespread support from the Maoris themselves.

The report from *New South Wales* does not compare favourably. There was an outbreak of diphtheria with 6854 cases and 306 deaths, and also a reintroduction of plague after a lapse of 12 years, but only two human beings were infected, although large numbers of infected rats were killed. The State has no control over midwives, many unqualified women practise, and puerperal fever is not notifiable by private hospitals; a Bill to remedy this state of things has been before Parliament for about three and a half years, but has not yet become law. The Rockefeller Institute is coöperating with the State authorities in the Tweed River area against hookworm, treatment is offered gratis and lectures and advice are given; the defective sanitation is being dealt with vigorously. The Pure Food Act of 1908 is bearing most excellent fruit, only 3·2 per cent. of the milk samples were found adulterated during the year. Phthisis, diphtheria, and typhoid were the chief killing diseases in 1921, the death-rate from phthisis in New South Wales, however, is only half that of England. The infantile mortality in Newcastle (N.S.W.) is 247 per 1000, and in this area there is a grave house shortage, which, however, is being tackled as rapidly as possible.

(2)

Among the reports from Africa that from *Kenya* makes interesting reading. The European health is best in the southern highlands, where for a tropical region a fairly temperate climate prevails. In 1922 there were no epidemics and the general health was good; many hygienic and sanitary works are held up on account of financial stringency, but good headway is being made nevertheless. The native death-rate is approximately 19–23 per 1000, the European only 9·04.

Tanganyika presents a comprehensive report, of which we publish a substantial abstract on p. 1039. The territory is a large one, some 365,000 square miles in area, with a native population of about four millions. Particular attention is drawn to the sterility of the Swahili women, partly due to venereal disease and partly to in-breeding. The survival rate of the children is adversely affected by congenital syphilis and by the infanticidal practices of the native medicine-men, which are now to a certain extent being put down by the new ordinances. The one ominous factor in the report is the mention of an introduction of trypanosomiasis into this area, where the tsetse-fly abounds and has hitherto been free from infection, active measures are therefore being taken to prevent the fly becoming infected. The report is interesting as showing in a fairly representative district the difficulties of medical administration among the natives of Africa.

Swaziland has had a good year as regards health, with very little malaria and practically no enteric. Syphilis is very prevalent among the natives, and during the year there were outbreaks of both mild small-pox and mild influenza, the death-rates of both being very low, in the case of the former due no doubt to the extensive vaccination of the native population.

Somaliland is evidently very healthy for Europeans; among the natives the only widespread infection appears to be venereal disease.

(3)

This group covers a wide field, chiefly in Malay and India. Visitors to the Malay pavilion at Wembley will see a model and a very good collection of photographs of the quarantine station at St. John's Island, *Singapore*, the largest of its kind in the Empire, and they will see what efforts are made to localise epidemics likely to be spread by sea-borne traffic. The death-rate in Singapore in 1922 was slightly greater than the birth-rate, largely owing to the high infantile mortality-rate, much of it the result of tetanus. The European death-rate is low, being 9 per 1000.

In *Brunei* malaria and ankylostomiasis are very prevalent, as is also venereal infection, which owing to difficulties with the natives is not easy to treat in the early stages. Since small-pox decimated the area in 1905–06 there have been no serious epidemics of any kind.

The report from the *Federated Malay States* shows an increase in the female Chinese population, which is supposed to herald a more permanent settling by the Chinese, and is welcomed by the authorities. The native birth- and death-rates almost balanced for 1922, and the infantile mortality-rate was 170·8. Yaws and syphilis are being energetically treated with novarsenobenzol; as regards the former, the disease is almost eradicated. The passing of the Midwives Registration Act and the fact that the vaccination-rate exceeds the birth-rate are both satisfactory points. As regards mental diseases the statistics are worthy of notice; although the incidence of malaria is enormous, only 78 cases of mental disease were attributed to it, 35 and 37 cases among the Chinese were attributed to syphilis and alcohol respectively and only two to opium.

In some of the *Unfederated Malay States* the natives are highly infected with ankylostomiasis and ascaris lumbricoides, but there have been no serious epidemics of other diseases. The Malay women are not tolerant of the trained midwife, and this together with bad sanitation gives a high infant mortality-rate, highest among the Indians (220), lowest among Europeans (37). Puerperal fever takes a heavy toll of the women. Health departments and school medical services are rapidly increasing. The cancer-rate among the natives is very low, as stated (0·25 per 1000), but as post-mortem examinations are not frequently held this figure is open to question, but even when allowances are made it is striking. Householders are very apathetic in helping with anti-mosquito work, which is much hindered thereby.

In *Ceylon*, an island splendidly equipped with all manner of medical requisites, the general health is very good, and here again the cancer-rate is noticeable as being bottom of the list of killing diseases with only 101 deaths per million of the population; "pyrexia" and infantile convulsions head the list with 4422 and 3028 deaths respectively.

In *Assam*, Schick testing for susceptible contacts in the diphtheria epidemic was most successful, this being the first set of tests carried out in India. Cholera in the absence of preventive measures took 16,000 lives, and "economy" is leaving malaria and kala-azar with a much higher toll than need be, as the public health staffs are being cut down.

The Director of Public Health for the *North-West Frontier* district of India has presented a report (see p. 1038) valuable for many comparisons that it shows, and the figures given of cantonment life ought to be sufficient to impress the authorities with the great and pressing need for extending rather than curtailing the sanitary services. Lieut.-Colonel F. P. Mackie's experiments with cholera vibrios in unripe and over-ripe fruit are mentioned, and the consequent necessity of eating only good fruit is obvious in the presence of an epidemic of cholera. The relative merits of cinchona and quinine are briefly mentioned. Unfortunately, it would seem that retrenchment in health matters is the rule everywhere; one wonders what the national balance-sheet would show if only the losses from this policy could be shown in pounds, shillings, and pence for comparison with the cash saving effected by the curtailment. The jail accommodation is somewhat below the requirements, but notwithstanding this the health of the prisoners was good. Interesting photographs are shown in the Tropical Health Section at Wembley of various jails in India; these give a good impression of the general arrangements and the physique of the men.

IMPERIAL SOCIAL HYGIENE CONGRESS AT WEMBLEY.

May 12th–16th.

First Day's Proceedings.

Mr. J. Wheatley, the Minister of Health, supported by representatives of the Governments of the Overseas Dominions and India, gave an excellent send-off last Monday at Wembley to this Congress, organised by the National Council for Combating Venereal Diseases. Mr. Wheatley said that he attached great importance to the conference and was pleased at its representative character. He extended a cordial welcome to the delegates from overseas. He specially referred to the results achieved by the mission organised by the National Council, in coöperation with the Colonial Office, which visited the West Indies, the Far East, and the Mediterranean to develop a scheme for the protection of our merchant seamen. In the course of his remarks, he mentioned that in the production and distribution of health we are all Socialists, and, further, that we are all opposed to free trade in disease. Mr. Wheatley concluded by saying he would await the results of the deliberations of the Congress with much interest, as they would be of the greatest assistance to him in settling what modifications of policy were now desirable.

Sir George Newman, Chief Medical Officer of the Ministry, gave an address on the Present Position of Government Action in Venereal Disease, which included an admirable résumé of the attitude to and treatment of venereal disease in the nineteenth century, the great advances in our knowledge of syphilis made in the early years of the twentieth century, and the events which led to the launching of the State-aided scheme for England and Wales in July, 1916. Sir George Newman gave the reasons why the Ministry up to the present time has been opposed to any scheme for notification of these diseases or for compulsory treatment, and he showed why it is impossible for the Government to give its official support to "self-disinfection" or the sale of disinfectants as a policy. The Ministry are of opinion that very much more can be done in the matter of the education of the public than is done at present, and that further facilities and improvements can be made in order to attract patients to the clinics and secure continuity of treatment.

Sir Leslie Mackenzie, member of the Scottish Board of Health, gave particulars of the working of the scheme in Scotland, in which country, as in England, there was evidence of a decline in the prevalence of these diseases since 1920. The Scottish Board had at present under consideration an application for approval to a scheme for notification and securing continuous treatment, and they had not yet given their official reply. He was in favour of more propagandism, and educational facilities had not been used to the full. But he asked, "Is there no case for an experiment in notification?"

At the afternoon session, Dame Rachel Crowdy, Director of the Social Hygiene Section of the League of Nations, read a paper on the Traffic in Women and Children, and explained that the League is only indirectly concerned with prostitution. The advisory committee of the League on this matter has, however, recently issued a questionnaire on the "licensed house" system to all members of the League. Particulars of the replies received up to date were included in Dame Crowdy's paper, and appear to indicate a considerable body of opinion that licensed brothels provide a ready market for the white slave traffic. There was also evidence that prostitutes in licensed brothels contract venereal disease more frequently than those living independently.

Prof. Winifred Cullis (London School of Medicine for Women) put in a strong plea for the teaching of biology, in preference to chemistry and physics, in the elementary schools. It was easy to make it interesting and connect it up with sociology. If taught to elementary scholars, it could readily be continued with adolescents. It ought to be in the curriculum of the training colleges. Unfortunately a regulation of the General Medical Council put obstacles in the way of biological teaching in schools, and she hoped the medical profession would get this regulation abolished.

Dr. F. J. H. Coutts, Ministry of Health, strongly supported Prof. Cullis's plea for the teaching of biology.

Sir Arthur Newsholme, in a paper entitled Some Aspects of Social Hygiene, developed the idea of the right teaching of sex-hygiene, beginning with instruction in self-control from infancy onwards.

Miss Alison Neilans, Secretary of the Association for Moral and Social Hygiene, in an effective speech, said we can do little by law or police, but must change public opinion. They in that hall did not really represent public opinion. According to public opinion prostitution was inevitable. We must alter public opinion by attacking the double standard and getting a re-statement of the basis of sex morals and ethics.

Mrs. Falconer, of the American Social Hygiene Association, also spoke on educational methods.

The first day's proceedings were chiefly set apart for invited speakers. Opportunity for general discussion came later.

Public Health Services.

THE HEALTH OF THE CITY OF LONDON.

THE estimated population of the City for the year 1923 was 13,180. Dr. W. J. Howarth gives in his annual report some interesting particulars from the census returns. For the first half of the nineteenth century the population of the City was stationary at about 125,000, but since 1850, owing to the efforts of the sanitary authority and the demands of business, it has declined census by census to the present figure.

Housing and Personal Health.

The erection of commercial buildings of greater height has "obstructed" many of the remaining dwellings and rendered them "unfit." Thus there are two unhealthy areas waiting to be dealt with as soon as alternative accommodation can be found for the persons to be dehoused, and for these occupants Dr. Howarth suggests tenements should be erected on a site to be obtained as near the City boundaries as possible. Using the standard of two persons to a room as a basis, the census shows that 109 families are living under conditions below such standard. Of the small City population, 1292 males and 571 females work outside its area. On the other hand, the number of persons who live outside the City but come into the City to work daily is 288,626 males and 115,678 females.

The statistics of the small residential population when analysed are founded on figures too small to justify deductions from the comparison between one single year and another; but for 1923 the principal were: Birth-rate 8·2; death-rate 11·5; infant mortality-rate 81; tuberculosis death-rate 1·3; cancer death-rate 1·1; death-rate from respiratory diseases and influenza 1·8; and maternal mortality from childbirth 9·0. A table included in the report shows that cremation does not make rapid progress. Thus the highest total of cremations in the United Kingdom in any one year was 2031 in 1919 and in 1923 the number was 1986. Dr. Howarth quotes Dr. J. S. Owens as being responsible for the statement that London now receives nearly 30 per cent. more sunshine that it did in 1881, and expresses the opinion that if the companies concerned gave special terms for the gas and electricity used for heating and cooking purposes, the further improvement in the atmosphere would be so marked as to create an agitation against the unnecessary use of common coal. It is disappointing to learn that the very successful treatment of parturient women, suffering from syphilis, carried out through the Metropolitan Asylums Board, at Thavies Inn Infirmary, is not used as it might be. The Board think the facilities provided are not sufficiently well known to medical practitioners and a circular letter on the subject has been sent to every practitioner in the City.

Purity of Milk and Bread.

In view of the fact that milk-vendors, prosecuted for selling milk below the standard, frequently allege that the milk has not been tampered with, Dr. Howarth has arranged for some experimental sampling to be undertaken in order to illustrate how easily careless methods on the part of the retailer may lead to an apparent abstraction of fat or even an addition of water. Some of the examples given are the poorness in fat of the last milk in a counter pan emptied by a dip measure, or of the milk from the tap of a churn on a "pram" unless it is regularly stirred with a plunger during its round. Careless distribution of milk from railway churns after a long journey is another example cited, and another less common is the careless thawing of milk which has been in cold storage. A sample of new milk from Holland was reported to contain only 2·38 per cent. of fat. Some vendors of bread are in the habit of exchanging new bread for old, and this is mentioned as a possible means of spreading infection, and the desirability of bread being enclosed in wrappers is also referred to. As wrapping keeps the bread new for a longer period, the general adoption of the latter practice would lead to the disappearance of the former.

Meat Inspection.

Under the heading of meat inspection, Dr. Howarth comments on the large proportion of home-killed pig carcasses affected by tuberculosis. He suggests that there is much carelessness among pig feeders, especially in the use of milk from tuberculous cows. On the other hand, little tuberculosis is found among the carcasses from Holland, which country continues to be the chief source of the pork-supply. The quality of Australian beef has improved and the new method of cutting the hind quarters has given satisfaction to the trade, but there is no improvement in the dressing and finish of New Zealand beef. At the Aldgate slaughterhouses six calves of ages varying from 2 to 9 months were found to be affected with generalised tuberculosis, and in none of these were lesions found in the intestines or mesenteric glands. Fifty per cent. of the cows affected by generalised tuberculosis and 16 per cent. of all the tuberculous cows had lesions in the mammary glands, and three had, in addition, lesions in the uterus. All these cows had been presumably producing milk up to the time of slaughter. These figures, Dr. Howarth points out, confirm the need for the re-introduction of the Tuberculosis Order of 1914. Some authorities wish to have the inflation of carcasses prohibited. As long as a clean mechanical apparatus is used for the purpose, Dr. Howarth considers no strong argument can be advanced against the practice, except that it may give a fictitious value from the improved appearance.

A Diminution of Rats.

The scheme of rat repression shows progress. Thus Mr. Mayne, who is in charge of this work, reports that the proportion of buildings inspected which were found to be infested was considerably lower in 1923 than in 1922. One of the weak points in the scheme is that the responsibility falls on the occupier, and that in many cases considerable structural alterations are necessary in order to obtain a satisfactory result. Buildings may be infested with either the black or the brown rat, and the first step of the rat officer is to find out which species is the cause of trouble. If the black rat is the intruder, the examination of the building begins at the roof; if the brown rat, the inspection begins in the basement, and it is frequently necessary to test the drainage system. The manager of one of the larger railway companies is of opinion that rats are less numerous than formerly, and rat-catchers engaged in the City took fewer rats in 1923, in spite of having contracts with a larger number of City firms.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 3RD, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely: Small-pox, 132; scarlet fever, 1246; diphtheria, 642; enteric fever, 67; pneumonia, 1357; puerperal fever, 44; cerebro-spinal fever, 11; acute poliomyelitis, 4; acute polioencephalitis, 4; encephalitis lethargica, 278; dysentery, 7; ophthalmia neonatorum, 118. No cases of cholera, plague, or typhus fever were notified. Cases of encephalitis lethargica, more numerous than in any previous week, were notified in the following counties: London, 50; Chester, 6; Derby, 9; Durham, 7; Essex, 5; Gloucester, 14; Kent, 5; Lancaster, 35; Northumberland, 18; Stafford, 9; Surrey, 5; Warwick, 29; Worcester, 4; Yorks, East Riding, 7; West Riding, 42; and elsewhere in smaller number.

Deaths.—In the aggregate of great towns the deaths from influenza fell from 218 to 167. In London the deaths from diphtheria numbered 13 and those from measles fell to 40; deaths from influenza rose from 21 to 27.

Correspondence.

"Audi alteram partem."

THE MEDICAL TREATMENT OF CATARACT.

To the Editor of THE LANCET.

SIR,—I read with interest the article by Mr. Inglis Taylor in THE LANCET of April 5th on the medical treatment of cataract, for I certainly think—and have acted on this for some years now—that we ought to do something more for our cases of commencing cataract than simply tell them to come back to us when they are ripe for operation. In my Doyne Memorial Lecture, read at the Oxford Ophthalmological Congress in August, 1922, I made an attempt to collate and estimate our knowledge of the ætiology of cataract, and I am prepared to welcome any attempt to treat cataract medically. We shall not, however, arrive at any sound line of treatment except from a correct ætiology.

Prophylaxis is most important. I cannot agree with Dor's theory of hydration. Chemically this theory is wrong. For instance, to speak of hydration which implies nothing more than added water in the same breath with ferments which are hydrolytic agents giving rise to chemical decomposition is inaccurate, and ought not to go unchallenged. Hydrolysis, as I have shown, is undoubtedly the first chemical change taking place in the lens in a genuine cataractous process. I omit from this statement coagulation of protein such as occurs when the crystalline is put into a solution of sugar, or in some contusion opacities of the lens which I have seen clear completely in ten days even when vision is as low as 6/60. Calcium taken internally or applied locally may act by reducing the relative acidosis which is so common in subcapsular senile cataract, but in my experience potash is to be preferred, and I think that any resulting good is due to this element, which is a cell food and a normal constituent of the lens. Potash is wanting or deficient in cataract.

I have seen in many cases great improvement in the vision follow from medical treatment. To attempt to treat all alike with any particular remedy without investigating to the best of one's ability the ætiology savours of empiricism. For instance, I have recently seen a case of double spotted cataract, the onset of which coincided remarkably with the development of an ovarian cyst which was eventually removed. The opacities now are, I consider, stationary and may remain so for some years as the patient is considerably below the average age of onset of so-called senile cataract. I see no reason why we should not feed the lens on potash in such a case, but so long as the cause remains operative there would be little chance of a cure. Again, I have shown that there is such a cataract as a "refractive cataract" due to uncorrected error of refraction in early life; the treatment of this is, of course, prophylactic.

The time has come now to study each case of cataract carefully with reference to its ætiology; we must not be content to lump all types together under one heading.—I am, Sir, yours faithfully,

Bath, May 5th, 1924. J. BURDON-COOPER.

A CRITICAL EXAMINATION OF PSYCHO-ANALYSIS.

To the Editor of THE LANCET.

SIR,—Dr. R. M. Riggall in his letter appearing in to-day's issue of THE LANCET charges me with being "incapable of understanding the psycho-analytic conception of the unconscious." This may be correct in a way—namely, in the way in which I am incapable of understanding the conception of ghosts and spirits. It appears to me that the psycho-analyst conception of the unconscious is the result of anthropomorphic tendencies with respect to the inner world, as the creation of ghosts, demons, and deities is the result of the same tendencies with respect to the outer world. Owing to this incapability of mine Dr. Riggall finds it "difficult to know what kind of proof I require." I am sorry, but I cannot help him. I could not say off-hand what proof I should require to convince me of the existence of ghosts and spirits, but I am willing to examine dispassionately and without bias *any* "proof." However, as I said before, the "unconscious," qua unconscious, is not the key-stone of the psycho-analytic arch, for Pierre Janet, Morton Prince, and others assume an unconscious though totally different from the psycho-analytic one. But the assumption of even that sort of "unconscious" is, I hold, quite unnecessary. The key-stone to the psycho-analytic arch is the method of dream-analysis, &c., for penetrating into it. Freud advanced five reasons to show that the results of these analyses were correct, and every one of these five reasons I have, I believe, shown conclusively in my book to be absolutely unsound. All these "analyses" are teeming with suggestion; in fact, Freud himself admits this. Here are his own words: "A psycho-analysis is not an unbiased scientific research, but just a therapeutic intervention. The physician gives in psycho-analysis every time to the patient the respective expectation-ideas by means of which he (the patient) shall be enabled to recognise that which is unconscious and to seize it, sometimes this is done more freely, sometimes less. Just as it happens, some cases require more help, others require less. Without such help no one can get on."[1] After this all argument appears really superfluous, for it shows that dream-interpretation is the *via regia* to the unconscious, not of the patient, as Freud says, but to that of the psycho-analyst, as I suggest. Dr. Riggall's statement that I have not employed the technique myself is an unwarranted assertion, for he would have found evidence to the contrary if he had read my book which he assumes to criticise. Why he persists to harp upon *abreaction* after the quotation from my book given in my last letter to you, if not for the purpose of side-tracking the discussion, I fail to see. As to Dr. Riggall's test-tube analogy reasoning, it suffers from the same defects as Freud's arguments of the same kind and of which I demolished nearly half a dozen in my book. I could easily turn the tables upon Dr. Riggall with this very argument, but I suppose your space is too precious.

I am, Sir, yours faithfully,

Shortlands, Kent, May 10th, 1924. A. WOHLGEMUTH.

WASTING DISEASES OF CHILDHOOD.

To the Editor of THE LANCET.

SIR,—In his comprehensive lectures on the Wasting Disorders of Early Infancy recently published in THE LANCET, Dr. L. G. Parsons makes the statement that xerophthalmia is a rare disease in this country, and mentions that in 13 years only 13 cases were seen at the Birmingham and Midland Hospital for Children. He contrasts this with the condition in Denmark, where he says "the disease has been observed much more frequently," without, however, giving figures.

As this statement may give a wrong impression of the actual incidence of the disease and of the significance of this incidence, I venture to submit the following considerations. Xerophthalmia is a rare disease even in Denmark. A Danish ophthalmologist, Dr. Olaf Blegvad, has collected all the cases of the diseases which have occurred in Denmark during the years 1909–20, and has discussed the importance of this disease in an important monograph of which a summary written by himself has appeared recently in the *American Journal of Ophthalmology*. The total number of cases of xerophthalmia observed in the whole of Denmark during the 12 years 1909–20 is only 445. The disease is, as he points out, an economic disease; it occurs only among the poorer classes. It is, therefore, not admissible to assume that the disease is rare or absent in this country because it happens to be infrequent in one particular locality. It is certainly more frequent in some parts of the country than Dr. Parsons's statement would lead one to believe. For in the fourteenth annual report of the school medical officer for the West Riding of Yorkshire County Council for the year 1921 one doctor, Dr. Tyrrell, discovered 19 cases in two years in one relatively small area. It is possible also that the disease in its mild form is not always recognised and merely regarded as a conjunctivitis. That was the case, for instance, in the previous outbreaks in an industrial school which I quoted in my recent lecture. And in his report on the Health of the School Child, in which not a single case of xerophthalma is reported, Sir George Newman quotes one authority who looks upon diseases of the surfaces of the eye merely as indicating lack of cleanliness.

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[1] Sammlung kleiner Schriften zur Neurosenlehre, 3te Folge, Leipzig, &c., 1913, p. 88.

The importance which attaches to the occurrence of even a few cases of xerophthalmia is this. Xerophthalmia is not merely an affection of the eye, it is part of a general condition of malnutrition due to a deficiency in the fat-soluble vitamin-A, which manifests itself long before the eye disease appears by subnormal growth and weight, by anæmia, general debility, and by a diminished resistance to infection, especially infections of the respiratory tract. Xerophthalmia only sets in when the condition of malnutrition has reached its extreme stage. That means that the ill-effects of a vitamin-A deficiency manifest themselves long before the appearance of the eye affection.

The occurrence of a numerically small number of cases of xerophthalmia in Denmark is taken by Dr. Blegvad not as a measure of the extent of malnutrition, but as a danger-signal disclosing a widespread condition of malnutrition due to the fact that the substitution of margarine for butter among the poorer classes has deprived the latter of an adequate supply of vitamin-A. In this country, according to Sir George Newman's report, out of 700,000 school-children examined, 15,000 suffer from malnutrition and another 15,000 from anæmia, conditions which *may* be due to underfeeding with vitamin-A. In this country margarine has replaced butter among the poorer classes, and cases of xerophthalmia have been discovered in a relatively small area approaching the proportion found in Denmark. The inference seems obvious.

I am, Sir, yours faithfully,
W. CRAMER.

Imperial Cancer Research Fund, London, May 12th, 1924.

THE NARCOTIC ACTION OF PURE ETHER.

To the Editor of THE LANCET.

SIR,—In your issue of May 10th Prof. Storm van Leeuwen states that a 5 per cent. solution of methylethylketone in ether is too toxic to be safe as an anæsthetic agent, because some cats anæsthetised with it on two consecutive days developed hæmorrhages in various organs. As I have used various ketones as anæsthetics for four years (including methylethylketone), I venture to say that I disagree with him. It appears impossible to predict what will be the effect of drugs on man by direct analogy from animals. For example, monkeys very frequently die of pneumonia after the briefest ether anæsthesia, but we do not say that on this account its use is contra-indicated in man.

Before any work on ketones was published, the question of toxicity was thoroughly investigated, and I had anæsthetised over 250 patients with mixtures of various ketones ranging from 0·5 to 10 per cent. in pure ether. It was recognised at the outset that if any ultimate preparation was to have any value as an anæsthetic it must have a mortality-rate lower than 1 in 5000 administrations to compare with the modern techniques employing other drugs. As no toxic effects were observed in the dilutions mentioned above, I next tried a 50 per cent. ketone-ether mixture. This was unsatisfactory, as the mixture was not homogeneous and did not readily vaporise. Pure ketones were next tried with no added ether, and an extremely good anæsthetic resulted. None of these patients vomited at all or exhibited any other after-effects whatever, and the method was only discontinued because some difficulty was experienced in obtaining a suitable vaporiser. The apparatus used consisted of a perforated aluminium plate heated by a resistance coil and mounted in the top of a mask from a Hewitt's wide-bore inhaler. An adjustable pressure-fed drip-feed led the ketone mixture on to the hot plate and the temperature was regulated by a rheostat. This vaporiser required considerable attention to maintain it at a constant temperature, but I have no doubt that if anyone took the time and trouble to construct a thermostatically controlled apparatus this difficulty could be avoided. It seemed to us, however, that the simpler way was to incorporate the ketone mixture in a volatile base, such as pure ether, and thus effect vaporisation without employing heat.

All the ketones used in the above experiments were purchased direct from British and foreign chemical manufacturers, so there is no doubt that they were reasonably pure products. In view of the fact that toxic effects over a period of four years have been at any rate not more pronounced than with other anæsthetics, I suggest that the statement that the use of a 5 per cent. solution of methylethylketone dissolved in purest ether "would be criminal" is, to say the least, somewhat exaggerated.

I am, Sir, yours faithfully,
C. LANGTON HEWER.

Regent's Park, N.W., May 10th, 1924.

THE ARGYLL ROBERTSON PUPIL IN NON-SYPHILITIC CASES.

To the Editor of THE LANCET.

SIR,—The brief annotation on this subject in THE LANCET of May 10th seems rather to suppose the occurrence of the Argyll Robertson pupil apart from neurosyphilis as somewhat of a novelty and the apparent number of such cases as "disconcerting." As a fact, cases of this kind have been familiar to the neurologist for years and have often been recorded. There is abundant evidence of a clinico-pathological kind to associate the Argyll Robertson pupil with lesions in the vicinity of the superior colliculi, and this site, further, has been shown experimentally to be one in which by an appropriate lesion the Argyll Robertson phenomenon can be produced. In the *Journal of Neurology and Psychopathology* for May, 1921, will be found the whole of the subject elucidated at length, with numerous instances of non-syphilitic A.R. pupils. There the evidence pointing to the mesencephalic origin of the phenomenon in a large number of cases is marshalled. Later contributions to the subject substantiating the mid-brain localisations have appeared in the same journal in the numbers for August, 1922, and August, 1923, respectively.

I am, Sir, yours faithfully,
S. A. KINNIER WILSON.

Harley-street, W., May 10th, 1924.

DRIED MILK REGULATIONS.

To the Editor of THE LANCET.

SIR,—May I invite attention to the Public Health (Dried Milk) Regulations, 1923, which came into operation on May 1st. As a physician who has studied dried milk since its adoption in infant feeding after the National Conference on Infant Mortality in 1906, I suggest that these regulations challenge criticism. Dried milk is a distinct boon, especially in India where most of my life has been spent, and I can find nothing to indicate that the numerous varieties on the market showed such disparity in composition as to call for special legislation. It will be seen that the Ministry consider that milk powder containing only half or three-quarter cream should only be used "under medical advice." This is not the general opinion of pediatricians either in this country or on the Continent. Hutchison says: "Many young infants do very well on half cream dried milk and digest it better than preparations which contain more fat"; and in France half cream is the variety in general use. At a meeting of the Society of Pediatricians of Paris held a year or two ago to specially consider the use of this substance in infant feeding, it was stated, "full cream powder on account of the large amount of fat which it contains keeps badly. . . . Half cream powder is the variety in general use; it complies with most requirements and is the form of dried milk which is the subject of this discussion."

The new regulations place dried milk at some disadvantage as compared with the fresh product as they require a standard of 3·6 per cent. of fat, whereas the legal standard for wet milk is only 3 per cent. It would be interesting to know why there should be different standards for the same article in different forms, but this inconsistency falls into insignificance when we realise that these regulations only concern themselves with dried milks which are accepted by the profession as safe for infant feeding when breast feeding is impossible, whereas no restrictions whatever are placed on the sale of products which are positively dangerous in infant dietary. Infant foods may be classed under three headings—viz., Group 1 consisting of dried milk in various forms, Group 2 consisting of various forms of carbohydrate either malted or designed to be digested in the process of mixing, and Group 3 consisting of unaltered starch. Starch is not a substance which can be given with impunity to young infants, yet the whole of a large group of infant foods consist of this product *pur et simple*. Under the law these products can be sold without let or hindrance, although Hutchison describes one much-advertised product as follows: "A baked flour containing 3 per cent. of soluble carbohydrates, the remainder being starch. Recommended to be made with milk or water. Made with water is totally insufficient food."

The regulations deal with products which are no more harmful in hand feeding of infants than ordinary cow's milk. It appears to me that the Ministry has started legislation at the wrong end.

I am, Sir, yours faithfully,

R. J. BLACKHAM, M.D., M.R.C.P.Edin.,
late Hon. Surgeon to the Viceroy of India.

Harley-street, W., May 7th, 1924.

*** The Health Committee of the Middlesex County Council has recently received a complaint with reference to an infants' food sold as a proprietary article by a drug store in a poor district of the county, and which is stated to have a very large sale. The county analyst's report confirms the statement made that this food consists principally of starch, and lacks the essential constituents of a suitable food for infants. The Health Committee understands that the use of the food in question is doing a great deal of harm to infants who are fed upon it, but there does not seem to be any action which the Council can take under the Sale of Food and Drugs Acts. In 1914 the whole subject of proprietary foods containing large quantities of starch was dealt with in an exhaustive report to the Local Government Board by one of the medical officers of that department, who urged the necessity for legislation to give local authorities power to deal with foods similar to the one under notice. It is probable that but for the war this report would have been acted upon years ago. The Committee is of opinion that the matter should be dealt with by Parliament, and that local authorities should be given power to prevent the sale of harmful food for infants.—ED. L.

TUBERCULIN IN ASTHMA.

To the Editor of THE LANCET.

SIR,—A summary of Mr. Arjeff's results on the treatment of bronchial asthma with tuberculin has recently been recorded.[1] He found this treatment most disappointing. On the other hand, Storm van Leeuwen and Varekamp[2] seem to have had brilliant results. The number treated in both series is small, but even a few cases, when added to one's own observations, are helpful.

I submit, in all modesty, a theory as to the rationale of giving tuberculin in asthma. Dr. Langdon Brown[3] points out that the problems involved in asthma are psychical conditions, peripheral stimuli, foreign proteins, want of endocrine balance, all tending to produce vagotonia, and goes on to say: "I should like to call special attention to enlarged bronchial glands, especially in children, and to suggest that this may explain the liability of healed tuberculosis to excite asthma in susceptible subjects."

We know that children tend to be vagotonic and that, as a rule, they take tuberculin well. We also know that we must observe caution in giving tuberculin to sympathicotonics. The symptoms of active tuberculosis tend to be those of sympathicotonia, and the symptoms of tuberculin poisoning are those of active tuberculosis. I suggest, therefore, that tuberculin stimulates the sympathetic and so antagonises the action of the vagus, thus explaining why an overdose of tuberculin which, on this hypothesis, acts first as a sympathetic stimulant then as a depressant, can bring on an attack of asthma, and also explaining the rapid improvement obtained by van Leeuwen and Varekamp which I have also noted in my cases with the initial small doses.

Tuberculin, except in large doses, causes no disturbance in the non-tuberculous. It seems improbable that the minute doses used in asthma could have any effect whatever unless there be some tuberculous focus present. That such focus is present in some cases of asthma, though not detected by clinical methods, is probable—e.g., the enlarged bronchial glands referred to above. It is stated that two of Arjeff's cases were made worse, and that in nine the tuberculin did not have the slightest effect. These results so differ from those of van Leeuwen and Varekamp and from mine that I cannot but believe there is a fallacy somewhere.

In reading van Leeuwen and Varekamp's paper carefully one is struck by the following points: (1) the small number (4 per cent. only) of asthmatics who gave positive skin reactions to foods, &c.; (2) that persons who react strongly to food tests also give a strong Pirquet reaction; (3) that 30 out of 34 cases of bronchial asthma gave a positive reaction with tuberculin; (4) that very small doses were given and better results were obtained by keeping to these small doses; (5) that in most cases two or three doses of tuberculin were sufficient to cure, but that treatment was continued for two or three months; (6) that on two occasions an attack of asthma was produced by overdosing; (7) that a strong Pirquet reaction does not point to active tuberculosis.

When I turn to my own experience, which is but limited, I find: (1) that in cases in which a modified Pirquet reaction (1 in 10 O.T.) is negative no benefit is obtained from tuberculin unless there is other evidence of disease; (2) that in every case which reacted to tuberculin there was considerable relief of symptoms; (3) that in such cases relief is quickly afforded even after a single dose or two. Believing that tuberculin in some way stimulates the sympathetic and in this way probably liberates adrenalin, I have always begun with a small dose and cautiously increased it, reaching, in some cases, as much as 1 c.cm. of tuberculin.

Summary of the Results.—(*a*) Cases which reacted to tuberculin or who had obvious signs of tuberculosis,

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[1] Brit. Med. Jour., Sept. 3rd, 1923.
[2] THE LANCET, 1921, ii., 1366.
[3] Roy. Soc. Med. Proc., January, 1923.

10—asthma apparently benefited or cured in all; (*b*) cases which did not react to tuberculin, 3—apparently no benefit in any. The following points are of interest: (1) the successful cases were mostly subsensitive to the tuberculin cutaneous tests—i.e., they reacted to dilutions of 1 in 10, but not to higher dilutions; (2) the blood pressure, generally speaking, was fairly high—130 or over; (3) in nearly all cases there was considerable fibrosis as shown by X rays.

My thanks are due to Dr. F. Hernaman-Johnson for X ray reports, and to Dr. H. A. Ellis for taking the tuberculin cutaneous reactions.

I am, Sir, yours faithfully,
F. E. Gunter, M.D. Edin.,
Lt.-Col., R.A.M.C. (ret.); Asst. Phys. Margaret-street Hosp. for Consumption and Diseases of the Chest.
May 12th, 1924.

SIGNS OF INSANITY.

To the Editor of The Lancet.

Sir,—In view of the importance which we are nowadays told is to be attached to isolated facts, as indications of insanity, it may be of interest to some of your readers to consider the evidential value of the accompanying letter, which I recently received from a patient under my care. Does the letter, which is a perfectly grammatical and intelligible production, indicate insanity, and if so, why? One wonders what a jury would think about it. I should add that the enclosure is by no means the entire letter, but only its first sentence.

I am, Sir, yours faithfully,
York, May 7th, 1924. Henry Yellowlees, M.D.

[Enclosure.]

Dear Sir,—Your assistant, Dr. M., was in the gallery on my return thither to-day after my matutinal round, an hour or two of which had been incidentally devoted to the project of consuming as rapidly as possible, with the idea of obtaining a good blaze, some recalcitrant tree roots, laurel clippings, ivy leaves, and other rubbish of a vegetable character which had been, or was in process of being, wheeled into the manure compound, and to take up the "thread" I enquired from him, in the absence of an announcement, as to the upshot of the consideration of—to me—the most important item on your agenda for last Tuesday's Committee meeting, and I was half inclined—in view of what I at first conceived to be—and perhaps too hastily—either a breach of etiquette or business routine—to confide in him the details of the cogent, personal matter in the negotiation of which, metaphorically speaking at any rate, you might almost be regarded as my plenipotentiary; but on ascertaining from Dr. M. after sounding him as to the practicability of an interview that when he left you this morning there was a "string" of six or seven people awaiting an audience, I deemed it preferable to await developments and avail myself of his suggestion to write to you!

Donations and Bequests.—The late Sir Alexander Grigor Jeans, of Cheshire, editor and managing director of Liverpool newspapers, left by will £250 to the Liverpool Royal Infirmary; £100 to the Liverpool Northern Hospital; £100 to the Liverpool Southern Hospital; and £100 to the Birkenhead Borough Hospital.—By will the late Mr. Robert Pauling, of Kingston-on-Hull, Yorks, left £500 to the Hull Infirmary; £250 to St. Dunstan's Hostel; £200 to the Victoria Hospital for Children, Hull; £200 to the Hull Orthopædic Institute; £200 to the Hull and Sculcoates Dispensary; and £200 to the Hull Institute for the Deaf and Dumb.

Paddington Green Children's Hospital.—With an increase in the number of patients treated during the year, an expenditure which exceeded the income by £1339, and a debt at the bank of £13,500, the committee of this institution make an earnest appeal for additional financial support. The total number of in-patients treated in 1923, the year with which the report deals, was 869 as compared with 750 in the previous year, or an increase of 119; while new out-patients numbered 12,122, as compared with 11,498 in 1922, an increase of 624. The number of attendances in the out-patient department in 1923 was 43,731 in contrast with 39,778 in the preceding year—an increase of 3953. The average stay in hospital of the in-patients was, roughly, 14 days in both 1922 and in 1923, but the average cost per patient for this period was, in the latter year, reduced from £8 10*s.* 8*d.* to £7 8*s.* 10*d.* During the year 1923, 113 patients were sent to the Convalescent Home at Slough, where the average stay is 35 days, the cost per patient being a little over £2 5*s.* a week. Towards the cost of maintenance of these convalescents parents contributed a sum of £126.

Obituary.

SAMUEL GEORGE SHATTOCK, F.R.S., F.R.C.S.Eng.

Samuel George Shattock, Professor of Morbid Anatomy in the University of London, who died at Wimbledon on May 11th after six months' serious illness, will be mourned not only by his colleagues and pupils at St. Thomas's Hospital and at the Royal College of Surgeons of England, but by pathologists throughout the civilised world, for his reputation was international. Born in 1852, he was educated at University College School and entered University College, London, as a medical student in 1869, qualifying M.R.C.S. Eng. in 1874. In 1875 he was awarded the Liston gold medal at University College Hospital and became interested in descriptive pathology as early as 1876, when he began a catalogue of the surgical pathology of the museum at University College, London, under the supervision of Mr. Marcus Beck. In 1878 he started an original investigation on the reparative processes that occur in vegetable tissues, and in the same year began to outline the attachments of the muscles on a series of human bones, now permanently exhibited in the anatomical collection of the Museum of the Royal College of Surgeons. He was then elected as Curator of the Pathological and Anatomical Museum, University College. In 1881 Shattock became a Fellow of the Royal College of Surgeons of England. and in 1884 was appointed Curator of the Museum at St. Thomas's Hospital, London, so that his association with both these institutions extends over more than 40 years. In 1884 also he was elected on the Morbid Growths Committee of the Pathological Society of London, and the next year a member of the Council of the Society. At this time he started an optional class on surgical pathology at St. Thomas's, which in 1886 became an official class. These were the first classes in surgical pathology given in London, and in 1888, as newly-appointed lecturer in surgical pathology, Shattock delivered the first course of lectures on surgical

Professor Shattock.

pathology ever held in London. The next year he started work on a new pathological catalogue of the museum at St. Thomas's Hospital, a task which engaged much of his time until 1894, when it was completed. In this year he gave the Morton lecture on cancer at the Royal College of Surgeons, and in 1895, for the first time, a private short course on practical bacteriology at St. Thomas's Hospital.

Meanwhile Shattock's work in pathological research had attracted attention, and he had been made successively secretary and vice-president both of the Pathological Society of London and of the Pathological Section of the B.M.A. annual meetings, and an assistant editor of the *Journal of Pathology and Bacteriology*. He contributed papers chronicling an attempt to cultivate protozoa from malignant tumours, jointly with Sir Charles Ballance, and on the healing of incisions in vegetable tissues to the Royal Society, and was selected to write the article on General Pathology of New Growths in Sir Clifford Allbutt's "System of Medicine." Shattock became a member of the Council of the British Institute of Preventive Medicine (now the Lister Institute) in 1896, and the next year was made Pathological Curator at the Royal College of Surgeons, London, holding this appointment jointly with his posts at St. Thomas's Medical School. In 1899 he was made editor of the Transactions of the Pathological Society, and in the same year was appointed external examiner in pathology of the Victoria University (Manchester). In 1904 he was made examiner in pathology at the University of London, with Dr. Sidney Martin; this was the first occasion on which a separate examination was conducted by special examiners in pathology. In 1907 Shattock was elected first President of the Section of Pathology of the Royal Society of Medicine, and was also elected representative of the section on the Editorial Committee of this newly-formed Society, and a member of the Council. Prof. Shattock first gave lectures and demonstrations at the Royal College of Surgeons in 1909, when he delivered two Hunterian lectures on Certain Matters connected with Internal Secretion and Certain Matters Connected with Fat. At this period he began a new edition of the pathological catalogue, of the Royal College, with the aid of Mr. C. F. Beadles. He determined to make a special feature of the general pathology, and many specimens were transferred from the groups illustrating special pathology to that of general pathology. In 1910 he became President of the Section of Pathology at the meeting of the B.M.A. in July and was made a Fellow of University College, London. In 1913 he was made President of the Section of General Pathology and Pathological Anatomy at the International Congress of Medicine which met in London, and gave the introductory address. He spoke of the large proportion of scientific work which was unattended by positive results. This necessarily followed from the incalculable complexity of what was investigated, as contrasted with the limitations of the researching instrument—the investigator. The temptation to substitute conjecture and verbal formulæ for accurate knowledge, common to all workers, should, he said, be fought most strenuously, and by example as well as precept Shattock throughout his life taught this lesson. In 1916 he received the diploma of the Honorary Fellowship of the Royal Society of Medicine as a recognition of scientific work, and the next year was elected Fellow of the Royal Society of London. In the same year he was appointed to select, with the help of Mr. Beadles, specimens for permanent preservation from the large number of specimens of gunshot injuries received from the seat of the war, and in 1922 began recataloguing the specimens of special pathology at the Royal College of Surgeons, a work which has not been completed at the time of his death.

Shattock's academic activities and his work in descriptive pathology might well have fully occupied his professional life; and, indeed, it is probable that he will be best remembered as a great pathological anatomist. But he also devoted considerable attention to the study of cancer, and it was his habit, whenever possible, to apply the experimental method to the problems of morbid anatomy. Further, he was one of the earliest students and teachers of bacteriology in this country. His influence on the surgical pathology of our time is almost impossible to assess, for besides the work which appears over his name very many of the surgical monographs published at the present time bear willing evidence to the unofficial help and inspiration he has given to the writers. Always a reserved man, few among his colleagues had any part in his private life. His interests were always those of the student, and for upwards of 40 years every moment he could spare from his professional work were spent in compiling and elaborating notes on religion and kindred subjects which, by his wish, will be published posthumously.

A fellow-pathologist writes:—"Although it has been generally known that the state of his health has for some time been such as to give rise to grave anxiety, the news of Shattock's death must inevitably come as a severe shock. For so many years he has occupied such a prominent place in scientific medicine that it is scarcely possible to realise that his life's work is really at an end. As a teacher of pathology few men have played a more important part. It is difficult for the modern student to visualise a curriculum which contained no recognised teaching in pathology, and it is well for us to realise that had it not been for the devotion and enthusiasm of such men as Shattock the study of scientific medicine in London could never have reached its present level. Above everything else a morbid anatomist, a great part of his life's work was given to the pathological museums of St. Thomas's Hospital and the Royal College of Surgeons; the pathological collection of the College is itself a monument to his untiring energy and skill. The story of Shattock's life is intimately bound up with that of the Pathological Society of London and the Royal Society of Medicine. For close on half a century he was one of the mainstays of the Society. Though of late years he rarely attended the laboratory meetings, he was scarcely ever absent from the more formal meetings in the old days in Hanover-square and later in Wimpole-street. The actual bulk of his contributions to the Transactions on a great variety of subjects must be very considerable, but possibly of even greater value were his contributions to debates and his personal influence. Himself a most accurate worker and a man of great learning, he insisted on a high standard, and though from time to time his junior colleagues may perhaps have realised with some chagrin that there is indeed nothing new under the sun, his criticisms were always stimulating. And no man ever applied to him for help and assistance in vain. A great student, a great teacher, and an upright man, Shattock made for himself a place which it is doubtful if another can ever fill."

The following appreciation is from a colleague at the Royal College of Surgeons of many years' standing:—

"The death of Prof. Samuel Shattock removes a familiar and affectionately regarded figure, not only from the Museum and Library of the Royal College of Surgeons and from St. Thomas's, but also from Wimbledon. Seeing this remarkable old savant in the costume of a bygone generation of medical men, the fine musing face touched at times with a kindly smile under the broad-brimmed top hat of a shape that defied all changes of fashion, the highly individual ambling gait, the immemorial black bag of ample dimensions—seeing these, people familiar with his aspect in their daily walks have wondered who "the old professor" might be, and have been justly rebuked and surprised when informed that he was one of the acknowledged chiefs of the world of science, and especially of his own world of pathological anatomy. He had, indeed, accomplished an infinity of work on the lines of the Hunterian tradition at the

Royal College of Surgeons, where his best monument is Room III., on the floor of which, during 1923, he had finally arranged the magnificent collection of specimens illustrative of the principles of pathology. Jointly with Mr. Cecil Beadles, Shattock had begun to select, arrange, and catalogue specimens as long ago as 1910, ‘thus laying the basis of the scheme which they have now brought to a most successful issue.’ The words quoted are from Sir Arthur Keith’s museum report for 1923, where a full and interesting account of Shattock’s recent work in general pathology will be found. Death intervened before he could finish his last great undertaking—the arrangement of the Section of General Pathology. An ardent worker, a man of the greatest acumen and scientific learning, Shattock remained much of a mystery to the colleagues about him. It has taken one of them half a lifetime to find out that he knew all the names of the Derby winners for some 100 years, that he was a devotee of cricket, never missed an opportunity of going to see a match at Lords, and was an authority on cricket scores; also that he was very musical and an excellent executant, and a very kindly genial gentleman, both at his own Wimbledon home and in his museum laboratories.”

Prof. Shattock leaves a widow, one daughter, and three sons, of whom one, Mr. C. E. Shattock, is surgeon to the Royal Free Hospital.

GEORGE HENRY OLIVER, L.R.C.P. LOND.

Dr. G. H. Oliver, consulting ophthalmic surgeon to the Royal Eye and Ear Hospital, Bradford, died recently at his residence in Bradford after a long illness. Born in 1861, he received his education in Leeds and Vienna, and qualified in medicine in 1885 as L.S.A. and M.R.C.S. Eng. Three years later he obtained the L.R.C.P. Lond. He laid the foundations for successful ophthalmological work at the outset of his career; after qualifying he held the position of demonstrator of anatomy in the University of Leeds, thus acquiring a thorough knowledge of general anatomy, and subsequently in Vienna he devoted himself to the study of the eye. On his return to England he began his professional life in general practice first at Clayton and shortly afterwards in Bradford, but he gradually limited his work to ophthalmology alone and was appointed hon. surgeon to the Bradford Eye and Ear Infirmary, a position which he held until 1921, when, at the age of 60, he was appointed to the consulting staff.

Dr. Oliver kept himself abreast of the latest developments in his specialty and, while connected with the Bradford Infirmary he frequently obtained leave to visit centres where special original work was being done in order to get first-hand information. When the Oxford Ophthalmological Congress was founded in 1909 he was one of its original members. In 1913 he gained the Oxford Diploma in Ophthalmology and remained for a time as lecturer in ophthalmology at Oxford University. He also held appointments as ophthalmic surgeon to the Health Committee of Bradford City Corporation and to St. Luke’s Municipal Hospital, Bradford. During the war he was officer in command of No. 84 Ophthalmic Centre War Hospital, and was ophthalmic surgeon to the Bradford War Hospital. In 1922 he was President of the Bradford Division of the British Medical Association. Dr. Oliver contributed many articles to medical journals on his own subject.

A colleague writes of him: “An indefatigable worker, Dr. Oliver was simple in his tastes and lived for his profession. He was a good pathologist, examining every case with meticulous care, and as a refractionist he was exceptionally quick. His love of reading bore fruit in the excellent collection of the latest English and German ophthalmological works in the library of the Bradford Infirmary, where he acted as curator. He was a great favourite with his patients no less than with his medical friends and colleagues, and he will be greatly missed.”

DAVID NEWMAN, M.D., C.M., F.R.F.P.S. GLASG.

Dr. David Newman, hon. consulting surgeon to the Glasgow Royal Infirmary, died recently at sea in his seventy-second year. A son of Edward Newman, M.D., Fleet Surgeon, R.N., he was educated at the Glasgow Academy, and proceeded to the study of medicine at Glasgow University, where he qualified M.B., C.M. in 1878. He continued his medical studies at the University of Leipzig, and in 1881 became a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow, gaining his M.D. Glasg. with high commendation two years later. Dr. Newman devoted himself early in his career to the special branch of genito-urinary surgery, on which he published in the course of his life-time many valuable treatises, both in book form and as articles in various surgical manuals, medical encyclopædias, and medical journals. Of his life and work a friend and colleague sends us the following account:—

> About 35 years ago Dr. Newman first demonstrated the cystoscope to the writer, an instrument regarded then as more or less a scientific toy, but shown by the demonstrator to be an instrument of precision. At that time the surgery of the urinary apparatus was ill-defined and crude: the work of Newman helped very materially to make diagnosis more exact, to lay foundations for certitude in operative procedure, and to widen the range of knowledge in anatomy and physiology. Newman worked for some years along other lines before finding his true métier. About 1880 he was pathological chemist in the Western Infirmary and assistant to Dr. Joseph Coats, pathologist to the infirmary, and at that time he realised the essential value of what we now call chemical pathology. Some years later he became pathologist in the Royal Infirmary, where he carried out his investigations into the malformations and malpositions of the kidneys. He next adventured in the region of diseases of the nose and throat, becoming in 1890 surgeon to the throat department of the infirmary. The outcome of this period of his career was the volume on Malignant Disease of the Throat and Nose. When, in 1893, Dr. Newman was appointed surgeon to the Royal Infirmary of Glasgow, he was already a man of some note, possessed of varied experience and a basic training in pathology. He became rapidly known as an authority on the surgery of the kidney and published several works on its surgical diseases. To a large extent his work was pioneer work and demanded originality of outlook and pertinacity in investigation. His reputation was considerably beyond the confines of his own school, and he was recognised as an authority in the schools abroad—this recognition taking practical form when he was invited to open a discussion on the surgery of the kidney at the annual meeting of the British Medical Association in 1908, and to become vice-president of the Urological Section of the International Congress in London in 1913. He was visiting surgeon to the Royal Infirmary for 21 years. There were but few students in the Royal in those days before the war, but when opportunity offered he proved himself to be a good teacher and a lucid, forceful lecturer. He was probably more at home demonstrating to the medical societies in Glasgow, where his audiences were men of experience in practice.

Dr. Newman was a man of good friendship within his own circle, and his death adds yet another to the recent losses in the surgical world of Glasgow.

JOSEPH HENRY WILKS, M.B., B.CH. CAMB.

BY the lamented death of Dr. Wilks, from encephalitis lethargica, at the age of 58 years, the medical profession of Sheffield has suffered a great loss. The eldest son of Mr. Edward John Wilks, principal of Messrs. Wilks Bros., ironmongers, he received his early education at the Wesley College, Sheffield, going on to Caius College, Cambridge, where he took his degree in 1887. His medical training began at the Sheffield School of Medicine, was continued at Cambridge and St. Bartholomew’s Hospital, London. After graduating in medicine in 1891, he held appointments at the West London and Bethlem Hospitals, and was clinical assistant at the Royal Ophthalmic Hospital. In 1898 he succeeded Dr. J. Black Milne on the honorary staff of the Sheffield Children’s Hospital, to which he devoted self-denying service over many years. During the war he rendered able help at the Wharncliffe War Hospital.

A medical friend writes :

"Dr. Wilks was a general practitioner of the best type. Upright, conscientious, and unselfish, he carried on his work amongst the people for over 30 years without any thought of personal aggrandisement or self-glorification. Those of us who had an opportunity of seeing something of that work knew the care and trouble with which every case was always investigated and watched, and the amount of thought and attention which he gave to every detail which might relieve or aid his patient. Although fully capable of so doing had he desired it, Wilks took little or no active or public part in the medical or civic affairs of the city. By nature he was modest and retiring, and was contented and happy in carrying out thoroughly and well 'the daily round, the common task.' His end came as he would have wished, whilst still in the midst of full work."

Dr. Wilks was taken ill one evening whilst making a professional call, and although at first the symptoms did not appear to be of a dangerous character so that he was able to leave home for what all hoped was a convalescent holiday, developments of a serious kind supervened, and the end came with tragic suddenness. He leaves a widow and two daughters.

THE LATE DR. H. A. BULL:

AN APPEAL.

WE have received an appeal on behalf of the widow and three children of the late Dr. Bull of Great Haywood, who, by his untimely death, have been left extremely ill-provided for. For some three years Dr. Bull suffered from abdominal disease requiring several operations and long absences from duty, and it is estimated that the capitalisation of all his resources will realise less than £200 per annum. We set out briefly last week Dr. Bull's services to the medical profession and to the community. He was hon. treasurer for many years of the Staffordshire Panel Committee, a member of the County Council and many of its committees, a member of the Conjoint Tuberculosis Board and of the County Insurance Committee ; on all of which he worked in the interests of his fellow practitioners. Dr. W. D. Carruthers, county medical officer of health, has agreed to act as hon. treasurer to the fund, and subscriptions should be sent to him at Martin-street, Stafford. The appeal is signed by Dr. T. Ridley Bailey, chairman, and Dr. George L. Lefevre, secretary of the Staffordshire Panel Committee.

THE LATE DR. R. GRAY.—Dr. Robert Gray, of Armagh, died on April 25th, aged 79. Educated at Armagh School and at the schools of the Royal College of Surgeons in Ireland, he qualified L.R.C.S.I. in 1865, two years later he obtained the L.R.C.P. Edin., and subsequently the L.S.A. Lond. In 1872, a year previous to obtaining the L.R.C.P.I., Dr. Gray was appointed medical officer of Armagh dispensary district, a position which he held for some 43 years when he was succeeded by his eldest son, Dr. H. A. Gray. He also enjoyed an extensive general practice. He became a Fellow of the Royal College of Physicians of Ireland in 1895, and Sheriff for County Armagh when he retired in 1915. He was president of the North of Ireland Branch of the British Medical Association in 1897–98. He was also president of the Armagh Natural History and Philosophical Society, and at one time president of the Irish Medical Association. He was an active Freemason, and took a prominent interest in the Church.

THE LATE DR. J. A. FRASER.—James Alexander Fraser, L.R.C.P. Lond., who died on May 8th in his seventieth year, was a well-known medical man in Romford, Essex. He was a member of a distinguished Highland family, was born in Mauritius, and educated at Blackheath and Merton College, Oxford, taking his medical training at Guy's Hospital. During his student days he was a noted Rugby football player. Over 40 years ago he set up in practice at Romford, and for 35 years he held the office of medical superintendent at the Romford Poor-law Institution. He was also consulting surgeon to the Victoria Cottage Hospital for many years. Dr. Fraser was highly esteemed and respected in the neighbourhood, and his death is keenly felt by the community.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Poor-law Reform.

BEFORE the third reading of Local Authorities (Emergency Provisions) Bill on Monday, May 12th, some discussion took place as to the Government's attitude in regard to Poor-law reform. Mr. GREENWOOD (Parliamentary Secretary to the Ministry of Health) stated that communications were now passing between the three parties with the object of bringing about a conference between them in order that so far as practicable an agreed measure might be reached. In the opinion of the Government that was a speedier and on the whole a more desirable method of procedure than that of a Royal Commission or of a Departmental Committee. If the leaders of the various parties could agree to a conference the Ministry of Health would put before it definite proposals both as to procedure and policy.

HOUSE OF COMMONS.

WEDNESDAY, MAY 7TH.

The Insured Population.

Sir THOMAS ROBINSON asked the Minister of Labour the number of men, women, boys, and girls, respectively, insured under the National Health and Unemployment schemes, respectively, in 1913 and at the latest possible date.—Mr. THOMAS SHAW replied : The following are the available figures for Great Britain :—

Year.	Health insurance.			
	Men.	Boys (16–18 years).	Women.	Girls (16–18 years).
1913	9,645,000		4,005,000	
1923	10,200,000		4,800,000	
	Unemployment insurance.			
1913	2,250,000			
1923	7,830,000	540,000	2,500,000	380,000

At the date of the last valuation of Approved Societies (December, 1918) males and females between the ages of 16 and 18 years insured under Health Insurance scheme were 6 per cent. and 10 per cent., respectively, of the total numbers of males and females. In 1913 those insured against unemployment consisted almost wholly of males.

Washington Maternity Convention.

Mrs. WINTRINGHAM asked the Minister of Health whether he intended that the terms of reference of the Royal Commission on National Insurance would allow for consideration of the possibility of the ratification by this country of the Washington Maternity Convention of the International Labour Office.—Mr. WHEATLEY replied : I think the terms of reference given in my reply to the hon. Member for West Woolwich on May 1st would enable the recommendations of the Washington Maternity Convention to be considered as regards applicability to the insured population of the country.

Hygienic Qualities of Milk.

Mrs. WINTRINGHAM asked the Minister of Health whether the reports of his inspectors showed that the public could rely on the high hygienic quality of the large quantities of milk described on sale as nursery, invalids, or guaranteed ; and, if not, whether he would consider how the public might be safeguarded in the matter.—Mr. WHEATLEY replied : According to the information in my possession the answer to the first part of the question is "No." I will consider what steps it may be practicable to take to safeguard the public in this matter, but in the meantime I think the consumer would be well advised not to place too much reliance on descriptions and designations implying special hygienic qualities other than those authorised by the Milk (Special Designations) Order.

Salaries of Public Health Nurses.

Mrs. WINTRINGHAM asked the Minister of Health whether he was aware that many local authorities were paying to trained nurses engaged in public health work salaries as low as £130 per annum ; and whether he would take steps to ensure them an adequate salary, in view of the importance of health-visiting, in the prevention of infant mortality, and the long period of training and other qualifications which candidates for these appointments were expected to hold.—

Mr. Wheatley replied : According to the information in the possession of my department, payment of a rate of salary as low as £130 per annum is exceptional. I fully appreciate the importance of the work of health visitors, and the question of their salaries will continue to engage my attention.

Training Centres for Blind Persons.

Mr. Graham White asked the Minister of Health the number of workshops, hostels, and training centres for blind persons which had been opened since the Blind Persons Act, 1920, came into operation.—Mr. Wheatley replied : Since the Blind Persons Act, 1920, came into operation six new workshops have been opened and one is now in course of erection. Considerable extensions have been made or are in progress in connexion with eight existing workshops. Three new hostels for blind workers have been opened and one extended. Training centres are under the control of the Board of Education, but I am informed by my right hon. friend that the Board have recognised 12 new centres, eight new hostels, and extensions to two centres for training purposes.

Spirochætosis in Scotland.

Mr. Clarke asked the Under Secretary to the Scottish Board of Health if he was aware that there had been another outbreak of spirochætosis (rat-bite disease) in the same colliery in East Lothian ; in view of this, would he take steps to institute a public inquiry so as to give assurance to the miners employed in that district ; and was he aware that in one of the pits a section was stopped, with the result that no outbreak had been reported as having taken place since the date of stoppage.—Mr. Adamson (Secretary for Scotland) replied : I am aware that a fresh case is being treated in the Royal Infirmary, Edinburgh. I am having full inquiry made as to the circumstances of the outbreak, and when I have received the report I shall consult with the Secretary for Mines as to the expediency of holding a public inquiry. I have no information as to the last part of the question.

Cost of Medical Benefit Bill.

Mr. Masterman asked the Chancellor of the Exchequer how much Government grant would be required by the operations of the National Health Insurance (Cost of Medical Benefit) Bill ; how much of the amount required for this year was provided in the Civil Service Estimates ; and what would be the total cost of this national expenditure in a normal year.—Mr. W. Graham (Financial Secretary to the Treasury) replied : The National Health Insurance (Cost of Medical Benefit) Bill is estimated to involve an additional charge on the Exchequer of £392,000 in a normal year, but in the current year Supplementary Estimates will be presented in due course to provide £490,000 for the period of 15 months from Jan. 1st, 1924, to March 31st, 1925, no provision having been included for this purpose in the current Estimates.

Pasteurised Milk Regulations.

Mrs. Wintringham asked the Minister of Health whether he was aware that a large part of the milk sold as raw milk in our large cities had been pasteurised or otherwise treated by heat ; and whether he was prepared to take steps to ensure that purchasers might know whether their milk had been so treated.—Mr. Wheatley replied : Yes, and, while I am doubtful whether it will prove practicable to take effective steps in the direction suggested, I will consider the hon. Member's proposal. I am hopeful that the provisions of the Milk (Special Designations) Order, 1923, as to the use of the term " pasteurised " may contribute to the enlightenment of consumers and lead to the disuse of unapproved processes.

Thursday, May 8th.

Hospital Observation of ex-Service Men.

Captain Ramage asked the Minister of Pensions what regulations, if any, were now in force whereby disabled ex-Service men were placed in hospital for the purpose of observation ; what was the object of this period of observation ; and was any compensation paid to the men concerned in cases where they had suffered financial loss through loss of time while under observation.—Mr. F. O. Roberts replied : In exceptional cases it is the practice to admit a man to hospital for medical observation with a view to the proper determination of his case. If the disability has been accepted by the Ministry as due to or still aggravated by service full treatment allowances for a man and his family are paid ; in other cases allowances are paid in respect of his family.

Schools for the Deaf.

Mr. Graham White asked the President of the Board of Education the present accommodation in the certified special schools for the deaf, and the approximate number of deaf and dumb children in the country.—Mr. C. Trevelyan replied : The present accommodation in certified special schools for the deaf is 4582. The approximate number of deaf children in the country (including those who are partially deaf) based on returns furnished by local education authorities in respect of the year 1923 is 5700.

Medical Examination of Young Persons in Factories.

Lieut.-Colonel Fremantle asked the Secretary of State for the Home Department when the report was likely to be published of the committee appointed to inquire into the working of the provisions of the Factory and Workshops Acts for the medical examination of young persons as to their fitness for employment in factories.—Mr. Henderson replied : This report, which I have just received, will be presented at once to Parliament, and copies will be available, I hope, by the end of next week.

Dissection of a Body at Cleator Moor.

Mr. Gavan-Duffy asked the Secretary of State for the Home Department if he was aware that since the unlawful dissection of the body of J. M. Ashton at Cleator Moor, and the removal of the deceased man's brains without the widow's knowledge or consent, an application had been made by the legal representatives of the insurance company for a further examination, and, as the widow had withheld her consent, the insurance company now refused to undertake the cost of giving Christian burial to the part of the man's body unlawfully abstracted ; and would he submit the matter for the consideration of the Public Prosecutor with the object of proceedings being taken against those concerned.—Mr. Henderson replied : As this case contains some element of doubt as to the legal position, I propose to send the information in my possession to the Director of Public Prosecutions for his consideration.

Final Pension Awards.

Mr. Ernest Brown asked the Minister of Pensions if he would make any statement as to the final awards of Service men's pensions, and especially as to the problem of recurring diseases and ailments.—Mr. F. O. Roberts replied : Cases of recurrent ailments are met by the provision of medical treatment, with the grant of allowances if necessary. As regards cases in which it is shown that an award was erroneously declared final at the time it was made owing to a definite error of fact or judgment, I am glad to be able to assure the hon. Member that cases of this kind are now, in fact, being put right by the Ministry, and the correct award, whether final or conditional, made in lieu of the award which had erroneously been made final. Where a man claims to need treatment on account of his condition his case will be considered if as a result of medical treatment and observation error is discovered. Such claims go in the ordinary course through the local offices of the Ministry.

Monday, May 12th.

Medical Services in India.

Mr. Snell asked the Under Secretary of State for India whether he was aware that the recommendations of the Medical Services Committee were forwarded by the Government of India to the Secretary of State for decision some two years ago ; that no decision had yet been given by the Secretary of State for India, especially about the transfer of certain appointments ordinarily held by the Indian Medical Service officers to the provincial medical services in the various provinces ; that the question regarding medical research and the reduction of the military assistant surgeons and sub-assistant surgeons, forming part of the recommendations, was still undecided ; and whether, in view of the protests made lately in the Indian Legislative Assembly, he would undertake to expedite his decision.—Mr. Richards replied : It has been found impossible to adopt the fundamental proposal of the Medical Services Committee—i.e., the creation of a single medical service in India. I am sending the hon. Member a copy of a paper showing the extent to which civil posts are now reserved for Indian Medical Service officers in the provinces. With the addition of posts under the Central Government these number 333, as compared with 380 recommended for reservation by the Committee and 422 before the war. In the interests of economy the research service has been reduced to a skeleton cadre of six posts, all held by Indian Medical Service officers. In the case of military assistant surgeons no question of reservation arises, and the provincial authorities are, I believe, in some cases effecting reductions. In regard to sub-assistant surgeons I am not clear what information the hon. Member desires.

Pensioners and Medical Treatment.

Mr. Ernest Brown asked the Minister of Pensions whether his attention had been called to the fact that many ex-Service men who no longer enjoyed any pension were in receipt of treatment and received treatment allowances on account of the fact that their illness was consequent on service; and whether he was prepared to allow such men to re-open their claim to pension, the receipt of which in many cases would tend to prevent the recurrence of the illness which entitled them to treatment and treatment allowances.—Mr. J. W. MUIR (Parliamentary Secretary to the Ministry of Pensions) replied: I am glad to say that comparatively few of the men who have received final awards of the class referred to are, according to my information, in receipt of medical treatment. The need of treatment in consequence of temporary fluctuation of condition does not necessarily indicate that the final award made was erroneous, though where it is demonstrated, as a result of treatment, that serious error has occurred, the case will be put right in accordance with the procedure indicated in the answer which my right hon. friend gave the hon. Member on the 8th inst.

The White Lead Convention.

Sir PHILIP LLOYD-GREAME asked the Home Secretary whether it was the intention of the Government to ratify the White Lead Convention; and, if so, whether, and on what occasion, the Government proposed to obtain the approval of the House of Commons to such ratification.—Mr. DAVIES (Under Secretary for the Home Office) replied: The Government have introduced the Lead Paint Bill with the express purpose of giving effect to the provisions of the draft convention, and if Parliament accept the Bill and pass it without any amendments inconsistent with the Convention, it is proposed to ratify the Convention.

Retirement of Coroners.

Brigadier-General SPEARS asked the Home Secretary whether there was any retiring age for coroners; and, if not, how many coroners there were over the age of 75.—Mr. DAVIES replied: The answer to the first part of the question is in the negative. I have no information as to the age of coroners now holding office.

Clearance of Slum Areas.

Captain REGINALD TERRELL asked the Minister of Labour whether any towns were availing themselves of the Government subsidies hitherto sanctioned by the House to clear and rebuild on slum areas.—Mr. WHEATLEY replied: 57 local authorities have submitted schemes for the improvement of insanitary areas on the basis of financial assistance provided either under the Housing, &c., Act, 1919, or the Housing, &c., Act, 1923. In addition, about 40 local authorities have schemes in course of preparation or under consideration.

TUESDAY, MAY 13TH.

Conditions of Asylum Workers.

Mr. HORE-BELISHA asked the Minister of Health whether the proposed Royal Commission to inquire into the Lunacy Laws would be empowered to inquire into the hours and conditions of work of asylum workers; and, if so, whether he would consider the advisability of giving representation to asylum workers on the Commission.—Mr. GREENWOOD (Parliamentary Secretary to the Ministry of Health) replied: It is not proposed to ask the Royal Commission to inquire into the hours and conditions of work of asylum workers. The Departmental Committee on the Nursing Service in Mental Hospitals which is now sitting will, I understand, report on the question of hours for nurses.

CASSEL HOSPITAL FOR FUNCTIONAL NERVOUS DISORDERS.—The second annual report of the Cassel Hospital for Functional Nervous Disorders deals only with those patients who were discharged during 1921 and 1922, in order that late results of treatment may not be ignored. During the period under review 95 patients were discharged from the hospital; since 13 of these were in the hospital twice, the report deals with 182 individuals. Of these 113 suffered from one or other form of psychoneurosis, 4 were drug addicts, 47 suffered from a psychosis, 13 from organic disease, and 5 were unclassified. Among the first group, 29 state that they are now quite well, and 56 are considerably better; 3 state that they are no better, but are at work; 4 are better, but do not attribute the improvement to treatment in this hospital; 15 report that they are no better, but of these cases it is said that none was ever very promising. The results in the other groups are reported with the same fairness and care, most of the information being given in tabular form. The great importance of taking the patient's history in minute detail is emphasised. Future reports from this excellent institution will be awaited with interest, since the method of making them serial by the addition of a further report on the cases dealt with in the previous year (in this case 1921) must add greatly to the value of the records.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia of the College was held on May 8th, Sir Humphry Rolleston, the President, being in the chair. The gentlemen elected to the Fellowship at the last Comitia (THE LANCET, May 3rd, p. 930) were admitted as Fellows and gave their faith to the College.

Licences to practise physic were granted to the following candidates who had passed since the last Comitia:—

James Carver, Cork and London; Margaret Corner, London; Horatio A. Cowan, Univ. Coll.; Howard S. Edwards, St. Andrews and St. George's; Dorothy E. Galbraith, Royal Free; Hyman Hamilton, Cardiff and London; Richard F. L. Hewlett, King's Coll.; Violet E. M. Mizen, Doris E. O'Doherty, and Margaret Swete, Royal Free; Lewis J. Watkins, Cardiff and St. Thomas's; and Muriel M. Yates, St. Mary's.

Diplomas in Public Health were granted, jointly with the Royal College of Surgeons of England, to the following candidates:—

Joseph D. Benjafield, Victoria E. Brander, Bernard Broadbent, James A. Cruickshank, Donald Davidson, Eric Hardy, John Hughes, Leslie M. Jennings, Dattatraya Ganesh Kotibhaskar, George Macdonald, Balaram Harischandra Madan, John A. Manifold, Don Swithin Merl Emmanuel Perera, Douglas Reynolds, Margaret M. Sands, Harbans Singh, Victor A. T. Spong, Marjorie P. Taylor, Edith I. Thornley, Ernest W. Wade, Lionel E. H. Whitby, Samuel J. Woodall, and Caroline I. Wright.

After some discussion it was resolved that candidates for the Membership be informed that the languages are not compulsory, but that credit will be given to those who show knowledge in these subjects.—A letter was received from Prof. C. Achard notifying the College of a lecture to be given at the Académie de Médecine to celebrate the tercentenary of the birth of Sydenham and inviting the College to send a representative. The Treasurer was nominated.—It was left to the President to nominate a representative of the College at the Congress of the Royal Institute of Public Health to be held at Bordeaux.—A letter was read from Prof. K. F. Wenckebach returning thanks to the President and Fellows for his reception at the recent lecture given by him before the College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At an ordinary meeting of the Council of the College held on May 8th, Sir John Bland-Sutton, President, in the chair, Dr. Arthur Longley Whitehead, senior ophthalmic surgeon, General Infirmary, Leeds, was introduced, and after signing the by-laws was admitted a Fellow. Mr. John Howell Evans was introduced and was handed an honorarium, together with a certificate recording the Council's appreciation of the merits of his essay on the Pathology and Treatment of Malignant Diseases of the Testicle for the Jacksonian prize for 1923. Mr. William Warwick James was introduced and was handed the "John Tomes" prize, together with a document declaratory of the award, for his scientific work on the eruption of teeth, orthodontics, and the pathology of dental caries. Miss Pera Rosaline Cecilia Crawford, London School of Medicine for Women, having been introduced, signed the Roll of Begley Students, and received the first year's payment for her studentship, together with a document certifying her appointment as Begley student for three years.—Sir Cuthbert Wallace, K.C.M.G., surgeon to St. Thomas's Hospital, was re-elected a member of the Court of Examiners for a period of five years.

Diplomas of Member were conferred upon 169 candidates (137 men and 32 women) who have passed the requisite examinations and have complied with the by-laws of the College. The names and medical schools of the successful candidates were given in THE LANCET of May 10th (p. 979) with the exception of J. Carver, Cork and London, and Doris E. O'Doherty, Royal Free.

Diplomas in Public Health were conferred (conjointly with the Royal College of Physicians of London) upon 23 candidates.

The Licence in Dental Surgery was conferred upon Arthur Stuart Daniels, Guy's Hospital.

The Jacksonian prize, value £18 10*s*., will be awarded in 1924 for a dissertation on the Pathology, Diagnosis, and Treatment of Œsophageal Obstruction, and in 1925 for one on the Pathology and Treatment of Lymphadenoma (Hodgkin's disease). Candidates must be Fellows or Members of the College, not members of the Council. The number and importance of original facts will be considered principal points of excellence. The dissertations are to be delivered before the last day of the year, addressed to the Secretary at the College.

SOUTH LONDON HOSPITAL FOR WOMEN.—The new wing at the South London Hospital, South Side, Clapham Common, S.W., will be opened by the Duchess of York on May 22nd at 3.30 P.M.

TUBERCULOSIS SOCIETY.—An ordinary meeting of this society will be held to-day, Friday, May 16th, at the Margaret-street Hospital, Margaret-street, London, W., at 8 P.M., when Mr. Frank Kidd will read a paper on Tuberculosis of the Genito-Urinary Tract.

ROYAL SANITARY INSTITUTE.—The thirty-fifth Congress of the Institute will be held at Liverpool from July 14th to 19th. Lord Salisbury, as President of the Congress, will deliver his address at the inaugural meeting in the St. George's Hall on July 14th, at 8.30 P.M.

CHELSEA HOSPITAL FOR WOMEN.—A dinner will be given at the Mansion House on May 21st, the Lord Mayor presiding, to assist in raising the sum of £20,000 required by the hospital for the completion of a nurses' home, and to enable the council to open the "paying wards" at a very moderate charge. Donations may be sent to the Secretary at the hospital, Arthur-street, S.W. 3.

UNIVERSITY OF LONDON.—A public lecture on Sir Thomas Browne, Author of the Religio Medici: His Skull and Portraits, will be delivered by Miss M. Tildesley, research assistant, Royal College of Surgeons of England, on Tuesday, May 20th, at 5.30 P.M., in the Applied Statistics Theatre, University College (Gower-street entrance). The lecture, which will be illustrated by lantern slides, is open to the public without fee or ticket.

INTERNATIONAL SOCIETY OF PUBLIC HEALTH OFFICERS.—The provisional committee elected to draft the constitution and rules of this Society consists of Dr. Saimon (France), Dr. Grimani (Italy), Dr. Breger (Germany), Prof. Wladimiroff (Russia), Dr. Tubiasz (Poland), Dr. Pareja (Ecuador), with a representative of Great Britain to be nominated by the Society of Medical Officers of Health.

LONDON INTER-COLLEGIATE SCHOLARSHIPS BOARD.—Six medical entrance scholarships and exhibitions of an aggregate total value of £630, tenable in the Faculty of Medical Sciences of University College and in the medical schools of University College Hospital, the London Hospital, and the London (Royal Free Hospital) School of Medicine for Women, will be offered. The examination will commence on June 24th. Full particulars and entry forms may be obtained from the Secretary of the Board, Mr. S. C. Ranner, M.A., the Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

THE annual dinner of the Federation of Medical and Allied Services has been postponed to Friday, June 20th, at 7.15 P.M., to suit the convenience of the Prime Minister and other official guests who will be present. The dinner will be at the Langham Hotel, London, and Sir Berkeley Moynihan, the President, will preside. The price of tickets is 12*s.* 6*d.* (exclusive of wine). Individual members and members of coöperating organisations are particularly requested to make early application for any tickets they may require for themselves or guests to the Secretary, Federation of Medical and Allied Services, 12, Stratford-place, London, W. 1.

COURSE OF MEDICAL HYDROLOGY AT BATH.—As part of a course conducted last week under the auspices of the University of London, a practical demonstration of balneological and allied treatments was given at Bath. The visitors, who arrived on Thursday afternoon, were divided into small groups under the guidance of Dr. F. G. Thomson, Dr. Rupert Waterhouse, and Dr. R. G. Gordon, and attended demonstrations of the throat and nasal sprays and the inhalation of the radio-active gas, Scottish and alternating douches, the vapour bath, and the local Berthollet bath. From the Queen's Baths the party went on to the Royal Bathing Establishment, where they were shown the local whirlpool treatment, the aeration bath, the Plombières douche, the Vichy douche-massage, deep and reclining baths with the various forms of undercurrent douching, the Bourbon Lancy douche for reducing high blood pressure, and the Aix douche-massage. At the Cross Bath a demonstration was given of voluntary and controlled movements in the treatment of spastic and flaccid paralysis. On Friday morning, at the Royal Mineral Water Hospital, Dr. Gordon demonstrated on Osteoarthritis and Spondylitis, Dr. Waterhouse on Fibrositis, Dr. Vincent Coates on Infective Arthritis and Gout, and a visit was paid to the biochemical and bacteriological laboratory under the guidance of Dr. J. M. H. Munro. The afternoon was again spent at the Royal Baths, the groups being in the charge of Dr. Charles Curd, Dr. Preston King, and Dr. Clulow Nixon, when demonstrations were given of electrical treatments of various kinds, including electrical hot-air baths, both whole body and local treatments, the radiant heat and light bath, and ionisation to be used either alone or in conjunction with various forms of heat treatment. The four-cell bath was shown, the Bristow coil, the ultra-violet ray lamp, the Bergonié treatment used in cases of obesity and certain other complaints, the high-frequency current, diathermy and arc-lamp treatment. Apparatus for mechano-therapy was shown in the Zander Department. Before leaving the members were shown over the Roman thermæ by the Director of the Baths, Mr. John Hatton. The visitors were entertained to tea by the Mayor of Bath on the first day, and by the local members of the medical profession on the second day. A dinner party given by the Baths Committee afforded an opportunity for a discussion on bathing facilities and their application.

CHELSEA CLINICAL SOCIETY.—The annual meeting will take place at the Club Room, St. George's Hospital, on Tuesday, May 20th, at 8 P.M., when officers will be elected for the session 1924–25. A discussion on the Treatment of Non-venereal Genito-urinary Diseases will be opened by Sir John Thomson-Walker.

PROPOSED MEMORIAL TO THE LATE SIR WILLIAM MACEWEN.—It is proposed to commemorate in some suitable manner the late Sir William Macewen, and a preliminary meeting to discuss the proposal will be held in the Hall of the Royal Faculty of Physicians and Surgeons, St. Vincent-street, Glasgow, on May 22nd, at 4.30 P.M. All members of the medical profession are invited to attend this meeting. Communications may be sent to Andrew Freeland Fergus, 14, Newton-place, Glasgow, or to Arch. Young, 5, Park-gardens, Glasgow.

THE LATE DR. G. B. EADIE.—George Balfour Eadie, M.D. Glasg., who died suddenly on May 8th, was one of the anæsthetists to the Victoria Infirmary, Glasgow. After obtaining his M.D. (with commendation) in 1905, it was his intention to specialise in diseases of the throat and nose, but during the war, while on service, he sustained so severe an injury to his hands as to prevent him from pursuing this course. On his return from service he took up the administration of anæsthetics. His skill and care soon brought him private practice, and his untimely death removes a popular figure from the Glasgow Faculty.

NURSES' COÖPERATION.—This Coöperation, which was founded in 1891 to secure to nurses full remuneration for their work, has just issued its thirty-third annual report, which records a continuance of prosperity during the year 1923. All candidates for membership must be State registered, and no nurse is admitted to the staff unless she holds a three years' certificate from a recognised training school and has had some experience in private nursing. The gross receipts from patients amounted to £49,073, of which sum £46,204 were paid to the nurses. Investments standing in the name of the Coöperation amounted to £3244. During the year under consideration there was much illness among the nurses and consequently a large demand for benefit from the sickness and benefit fund. The address of the Coöperation is 22, Langham-street, Portland-place, London, W.

MANCHESTER AND SALFORD: POOR-LAW HOSPITALS.—Members of the board of guardians of the Manchester and Salford Poor-law hospitals are making strong protests with regard to Lord Knutsford's remarks in an address at a recent conference summoned by the Labour Party in London to discuss the "Hospital Problem." So far as these areas are concerned, they state, Lord Knutsford's allegations are entirely undeserved. In these hospitals—i.e., the Poor-law infirmaries—the patients receive treatment equal to that in the best public or private hospitals. Indeed, the Manchester Poor-law infirmaries deal with 1000 patients a month and in large industrial areas the Poor-law authorities spare no expense in maintaining these hospitals in the very highest state of efficiency. They have their own visiting surgeon, ophthalmologist, and other specialists as occasion requires. The old prejudice against Poor-law hospitals has gone. These hospitals are under the inspection of the Minister of Health. In Manchester many patients come to the hospitals of their own free will and pay for their treatment, and their number is steadily increasing. At a meeting of the Salford guardians held on May 9th the chairman said he felt it his duty to state that the Salford guardians had spared no pains in making Hope hospital a thoroughly efficient institution, where the patients could rely upon having at their disposal every requirement dictated by modern science. The true solution towards better organisation and coördination of the hospital systems lay not in State management and State control of the hospitals, but in a system of natural local development under the control of elected or selected individuals who were in close touch with local requirements. Poor-law hospitals were doing work of a standard that would bear comparison with the best that voluntary hospitals could show.

MATERNITY CENTRES: INFORMATION AS TO BIRTH CONTROL.—The Minister of Health recently received a deputation, introduced by Mr. F. A. Broad, M.P., on the subject of birth control. The deputation urged that the Minister should remove the embargo on the giving of information with regard to methods of birth control at maternity centres. In their opinion it was contrary to the whole policy of the Labour Party to deny working women access to knowledge which was readily available to people who could afford to pay for it. They also requested that the Minister should make it quite clear that doctors in the Public Health Service were free in their public capacity to give this information when they considered it medically advisable. The Minister, in reply, said that a clear distinction must be drawn between allowing access to knowledge and actually distributing knowledge. No one would seriously maintain that access to knowledge should be forbidden, but public opinion on this question was not so definite that it would allow State- and rate-aided institutions to do more than direct people in need of advice as to where it should be obtainable. The decision, in fact, must be with Parliament and not be assumed by administrative action. The speakers for the deputation included Mr. H. G. Wells, Mrs. Bertrand Russell, Dr. Frances Huxley, Mrs. Jenny Baker, and a statement was read from Dr. Sloan Chesser.

THE PEOPLE'S LEAGUE OF HEALTH.—The League is holding an International Health Conference at the British Empire Exhibition from May 21st to 24th inclusive. The subject of the Conference is the Latest Knowledge regarding the Causes, Treatment, and Prevention of Disease. Viscount Burnham will deliver the presidential address, and the Conference will be divided into seven sections, as follows: (1) Housing and House Sanitation, under the presidency of Mr. A. Neville Chamberlain, M.P.; (2) Food, under the presidency of Sir William Arbuthnot Lane, F.R.C.S.; (3) Air, Light, and Water under the presidency of Sir Henry Gauvain, M.R.C.S.; (4) Some Overseas and Other Diseases, under the presidency of Sir William Simpson, M.D.; (5) Mental Hygiene, under the presidency of Col. Sir Courtauld Thomson; (6) Industrial Hygiene, under the presidency of Prof. Sir Thomas Oliver, M.D.; (7) Legislation Desirable with Regard to Health Matters. On each day of the Conference the Tropical Health Exhibit in the British Government Pavilion will be demonstrated to the delegates. Further particulars may be had from the Hon. Organiser, 12, Stratford-place, W. 1, from whom nomination forms to the Conference may be obtained.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

THE ROYAL SOCIETY, Burlington House, W.
THURSDAY, May 22nd.—4.30 P.M., *Paper to be read:*—Prof. J. W. Gregory and C. J. Gregory: The Geology and Physical Geography of Chinese Tibet, and its Relations to the Mountain System of South-Eastern Asia. *Papers to be read in title only:*—Madge Kaye and Dorothy Jordan Lloyd: A Histological and Chemical Investigation of the Swelling of a Fibrous Tissue. (Communicated by Dr. R. H. Pickard.) C. H. Browning, Prof. J. B. Cohen, S. Ellingworth, and R. Gulbransen: The Antiseptic Action of Compounds of the Apocyanine, Carbocyanine, and Isocyanine Series. H. J. Watt: Dimensions of the Labyrinth Correlated. (Communicated by Prof. D. Noel Paton.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, May 20th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for election to the Fellowship.

Wednesday, May 21st.

HISTORY OF MEDICINE: at 5 P.M.
Annual General Meeting:
Election of Officers and Council.
Papers:
Dr. Haldin D. Davis: History of Diseases of the Skin.
Prof. Charles G. Cumston: Remarks on a Lay Medical Tract: "The Duke's Desk Newly Broken Up," by William Lovell, Gentleman and Traveller, London, 1660.

Friday, May 23rd.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Annual General Meeting:
Election of Officers and Council.
Cases:
Dr. Stanley Wyard: Child of 13 suffering from Myelogenous Leukæmia.
Other cases will be shown.
Presidential Address:
Mr. R. H. Anglin Whitelocke: Posture in the Treatment of Disease.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Annual General Meeting:
Election of Officers and Council.
Paper:
Dr. Louis W. Sambon: The Elucidation of Cancer.

Saturday, May 24th, and Sunday, May 25th.

BALNEOLOGY AND CLIMATOLOGY.
Annual Provincial Meeting:
At Buxton.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, Leicester-square, W.C.
WEDNESDAY, May 21st.—4.30 P.M., Discussion on Tertiary Syphilis with Special Reference to its Cutaneous Manifestations, to be opened by Colonel L. W. Harrison, followed by Dr. Alfred Piney, Dr. C.H. Mills, and others. Clinical cases will be shown by the staff of St. John's Hospital. After the meeting the Fellows and Guests will dine together at the Criterion Restaurant.

MEDICO-LEGAL SOCIETY.—A meeting will be held at 11, Chandos-street, London, W. 1, on Tuesday, May 20th, at 8.30 P.M., when Sir Lenthal Cheatle will read a paper on Wounds of Entrance and Wounds of Exit. To be followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, May 19th, to SATURDAY, May 24th.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL. Special Intensive Course (second week).—THE INFANTS HOSPITAL. Mon., Tues., Wed., Thurs., 2–3 P.M., Clinical Instruction in the O.-P. Dept. Mon., 3 P.M., Dr. Noel O. Richards: Dem., Nursery Hygiene and Clothing. 4 P.M., Dr. Donald Paterson: Anæmias of Infancy. Tues., 3 P.M., Dr. Amy Hodgson: Dem., Diet from 1–5 years. 4 P.M., Dr. Bertram Shires: Diagnosis by X Rays. Wed., 3 P.M., Dr. Eric Pritchard: Dem., Dried Milk. 4 P.M., Dr. Donald Paterson: Vomiting. Thurs., 3 P.M., Dr. Eric Pritchard: Dem., Patent Foods. 4 P.M., Mr. M. S. Mayou: The Prophylaxis of Certain Eye Diseases, including Myopia and Cataract. Fri., 4 P.M., Mr. Tyrrell Gray: Pyloric Stenosis.—LONDON LOCK HOSPITAL. Clinical work daily. Lectures at Dean-street as follows. Tues., 2.30 P.M., Mr. McDonagh: Clinical Demonstration with Exhibition of Paintings. Wed., 5 P.M., Mr. Lindsay Rea: Interstitial Keratitis, Congenital and Acquired. Thurs., 2.30 P.M., Mr. W. Victor Corbett: Interpretations of the Wassermann Reaction. 4.30 P.M., Mr. Lawrence Abel: Some Complications of Gonorrhœa in the Male. Fri., 4 P.M., Mr. Johnston Abraham: Gonorrhœal Rheumatism.—MAUDSLEY HOSPITAL. Mon., 3.30 and 5.30 P.M., Dr. Bernard Hart: The Psychoneuroses. Tues., 2.30 P.M., Dr. F. C. Shrubsall: The Practical Aspect of Mental Deficiency. 4.30 P.M., Sir Frederick Mott: Brain Syphilis, its Symptomatology and Treatment. Wed., 2.30 P.M., Dr. Mapother: Dem. in Clinical Psychiatry.—PRINCE OF WALES'S GENERAL HOSPITAL. Special Course in Intensive Medicine and Surgery (first week).—ST. MARK'S HOSPITAL FOR DISEASES OF THE RECTUM. Operations, Clinical Demonstrations, and Lectures will be in progress during the day (second week).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, May 19th.—12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Simson: Diseases of Women. 4.15 P.M., Mr. Donald Armour: Lecture, Methods in the Diagnosis of Gall-stones.
TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.
WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Pernet: Skin. Dept. 4.15 P.M., Dr. Owen: Lecture, Infantile Disorders in the First Ten Days of Life.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 2 P.M., Mr. Bishop Harman: Eye Dept.
FRIDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
(At 4.30 P.M.)
MONDAY. May 19th.—Dr. W. Langdon Brown: Changing Standpoints in Metabolic Diseases.
TUESDAY.—Dr. F. G. Crookshank: Functional Hearts.
WEDNESDAY.—4 P.M., Mr. J. Howell Evans: Tumours of the Testicle.
THURSDAY.—Mr. J. Bright Banister: The Treatment of Contracted Pelvis.
FRIDAY.—Dr. L. R. Yealland: The Treatment of Neurosyphilis.

KING'S COLLEGE, Strand, W.C.
Monday, May 19th.—5.30 p.m., Prof. T. H. Brice, F.R.S.: The Development of the Human Embryo (University of London Advanced Lectures in Anatomy).
Tuesday.—5.30 p.m., Last Lecture.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.
Tuesday, May 20th.—5 p.m., Dr. Wilfrid Fox: Nævi and Moles.
Thursday.—5 p.m., Dr. MacCormac: Rodent Ulcer.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
Thursday, May 22nd.—4 p.m., Mr. Higgins: Demonstration of Surgical Cases.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, W.
Tuesday, May 20th.—5.15 p.m., Prof. J. Barcroft: The Effects of Altitude on Man (Lecture IV.).
Friday.—9 p.m., Dr. Andrew Balfour: Historical Aspects of Malaria.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 p.m.)
Monday, May 19th.—(At the Hospital for Women.) Dr. Leith Murray: Leucorrhœa.
Tuesday.—(At the Maternity Hospital.) Mr. Leyland Robinson: Albuminuria of Pregnancy.
Wednesday.—(At the St. Paul's Eye Hospital.) Mr. Thos. Stevenson: Eye Cases.
Thursday.—(At the St. George's Hospital.) Dr. F. H. Barendt: Skin Cases.
Friday.—(At the Eye and Ear Infirmary.) Dr. Hugh E. Jones: The Extracranial Complications of Infective Middle-Ear Disease.

BRISTOL UNIVERSITY POST-GRADUATE DEMONSTRATIONS.
Wednesday, May 21st (at the Hereford General Hospital).—3.30 p.m., Mr. H. Chitty: Abdominal Surgery in Children.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.
Tuesday, May 20th.—4.15 p.m., Mr. J. Howson Ray: Varicose Veins.

Appointments.

Clausen, R. J., M.B., B.S. Lond., has been appointed Anæsthetist to the Metropolitan Hospital, Kingsland-road, N.E.
Ratner, E., M.B., Ch.B. Manch., D.P.H., Assistant Tuberculosis Officer, Manchester.
Stephenson, G. E., M.B., B.S. Durh., Medical Officer of Newcastle Prison.
Charing Cross Hospital: Banister, J. B., M.D. Camb., F.R.C.S. Edin., Assistant Obstetric Physician; Broster, L. R., F.R.C.S. Eng., Assistant Surgeon; Richards, W. A., M.B., B.S., Surgical Registrar; and Young, F. H., M.B., Ch.B. Camb., M.R.C.P. Lond., Medical Registrar.
Certifying Surgeons under the Factory and Workshop Acts: Yell, W. L., M.B., Ch.B. Aberd. (Wartle); Prentice, J. S., M.B., Ch.B. Glasg. (Shap, Westmorland).

Vacancies.

For further information refer to the advertisement columns.

Belfast Municipal Sanatorium, Whiteabbey.—Res. Med. Supt. £750.
Bolton Infirmary and Dispensary—Res. Surg. O. £250. Two H.S.'s. £150. Asst. H.S. £100.
Bristol, Clifton Dispensary, Dowry-square. Res. M.O. £300.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Cambridgeshire Tuberculosis Colony.—H.P. £100.
Carlisle, Cumberland Infirmary.—Jun. H.S. £150.
Chelsea Hospital for Women, Arthur-street, S.W.—H.S. £120.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Clin. Asst. for Throat and Ear Dept.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—P. for Mechano-Therapeutic Dept.
Exeter, Royal Devon and Exeter Hospital.—Hon. Anæsthetist and Hon. Asst. Anæsthetist.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Radiologist. £100.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each £50.
Hospital for Women, Soho-square, W.—Res. M.O. £100.
Hull Royal Infirmary.—Cas. H.S. £130.
Kensington Tuberculosis Dispensary, 119, Ladbroke-grove, W.—Locum M.O. for one month. 35 guineas.
King Edward VII. Sanatorium, Midhurst, Sussex.—Med. Supt. £1000.
King's Lynn, West Norfolk and Lynn Hospital.—Res. Surg. O. £300.
Lancashire County Council.—Asst. County M.O. £800.
Leicester City Isolation Hospital and Sanatorium.—Asst. Res. M.O. £350.
Lichfield, County Mental Hospital, Burntwood.—Sen. Asst. M.O. £750.
Liverpool, Ministry of Pensions Hospital, Knotty Ash.—Consulting P. £300.
Liverpool, Royal Southern Hospital.—Hon. Gynæcologist and Hon. Asst. Orthop. S.
Manchester, Ancoats Hospital.—H.S. £100.
Manchester City.—M.O. £632 7s. 8d.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. R.M.O. and Jun. R.M.O. £140 and £100 respectively.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Registrar. £200.
Newcastle-upon-Tyne, University of Durham College of Medicine.—Vacancy in Dept. of Bacteriology. £600.
Oldham County Borough Education Committee.—Asst. Schools M.O. £600.
Oxford, Radcliffe Infirmary and County Hospital.—H.S., Cas. H.S., and Res. Accoucheur. Each £120.
Preston, Lancs, County Mental Hospital, Whittingham.—Locum Tenens M.O. £8 8s. per week.
Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. P.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. and H.S. Each £100.
St. Bartholomew's Hospital, E.C.—Radiologist. Asst. M.O. to X Ray Dept.
St. Mary's Hospital, W.—Surg. Reg. £200.
Sheffield, Jessop Hospital for Women.—Asst. H.S. for Gynæcological and Maternity Depts. £100.
Sheffield Royal Infirmary.—H.P. £60.
Stoke-on-Trent, Longton Cottage Hospital.—H.S. £150.
Wakefield, Clayton Hospital.—H.S. £200.
West End Hospital for Nervous Diseases, Welbeck-street, W.—Locum Tenens for post of Half-time Pathologist. £300.
West London Hospital, Hammersmith-road, W.—Med. Reg. £100.
Whitelands Training College, Chelsea, S.W.—M.O.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
The Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment at Shepton Mallet, Somerset.

Births, Marriages, and Deaths.

BIRTHS.

Druitt.—On May 7th, at North House, Petworth, Sussex, the wife of D. C. Druitt, M.R.C.S., L.R.C.P., of a son.
Eddison.—On May 7th, in London, the wife of Dr. H. Wilfred Eddison, of a son.

DEATHS.

Barker.—On May 9th, at Watford, suddenly, John Collier Barker, M.R.C.S., L.R.C.P., aged 62 years.
Batchelor.—On May 8th, in London, Charles Batchelor, M.R.C.S., L.R.C.P., of Fairfield-avenue, Staines, aged 61.
Cuffe.—On May 6th, at Johnstone-street, Bath, Edward Meade Cuffe, M.D., late Medical Officer at Wonford House, Exeter, only surviving son of the late Robert Cuffe, M.R.C.S., of Woodhall Spa.
Fraser.—On May 8th, James Alexander Fraser, M.R.C.S., L.R.C.P., of Western Lodge, Romford, Essex, in his 70th year.
Shattock.—On May 11th, at Wimbledon, Samuel George Shattock, F.R.S., F.R.C.S., aged 71 years.
Vicars.—On May 4th, at Guy's Hospital, London, Frederic George Vicars, M.D., aged 63 years.
Willes.—On May 7th, at Wellington-road, Bournemouth, William Willes, M.R.C.S., L.R.C.P., late of Greenwich, aged 69.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Royal Institute of Public Health: Congress in Bordeaux.—The Whitsuntide Congress, which meets at Bordeaux from June 4th–7th, will be divided as usual into a series of sections:—(1) State Medicine and Municipal Hygiene. Presidents: Sir Humphry Rolleston and Prof. C. Achard. (2) Naval, Military, and Air. Presidents: Vice-Admiral J. Chambers and Dr. Gérard, Ministre de la Marine. (3) Industrial Hygiene. Presidents: Sir Thomas Oliver and Prof. William Dubreilh. (4) Tropical Diseases. Presidents: Sir Ronald Ross and Prof. F. Mesnil, Institut Pasteur. (5) Pathology, Bacteriology, and Biochemistry. Presidents: Sir John Bland-Sutton and Prof. G. Mouriquand, Lyon. (6) Women and Public Health. Presidents: The Marchioness of Crewe and Mme. Wallerstein, Paris. These sections will meet concurrently on Thursday and Friday from 9 to 12 a.m. and 2 to 4.30 p.m., and on Saturday morning, the sectional presidential addresses being delivered at 9 a.m. on Thursday. The inaugural meeting of the Congress will be held at 2.30 p.m. on Wednesday in the Athénée Municipal, 53, rue des Trois Conils. Visits will be paid to the military exhibition arranged by the Ministry of War to the Port of Bordeaux and to other places of interest and beauty in the town and neighbourhood. The Congress dinner will be held on Friday evening in the Hôtel de Bordeaux. The London office of the Congress is 37, Russell-square, W.C. 1. The Bordeaux office is at the Faculty of Medicine, Place de la Victoire.

Notes, Comments, and Abstracts.

SOME SPAS OF SAVOY, THE DAUPHINY, AND THE JURA

The spa season in these districts of France runs from May or June to September, and during the last few years the numbers of British visitors who seek there health and refreshment has steadily increased. Apart from the intrinsic value of these resorts, together with other natural and social resources for various conditions of ill-health, much has been done to popularise them by the Office Français du Tourisme,[1] in connexion with which there are organised yearly visits of medical men both from this country and elsewhere to inspect and sample the fare provided at the different centres. In The Lancet of Feb. 9th, 1924, we referred to such a medical tour which took place last autumn, embracing the Jura, Savoy, and the Dauphiny It is with the spas visited on that tour, in which 180 medical men took part, that the present article deals. The party assembled in Lyons, and after a short stay at Aix-les-Bains, which is too well known to require a special description, the following places were visited.

Challes-les-Eaux.

This spa is only 20 km. from Aix, and occupies a pretty and picturesque situation in the broad Chambéry valley at the foot of Mont St. Michel. Challes is remarkable for the strength and activity of its sulphur waters and specialises in the treatment of nose and throat troubles. It is in great favour with public speakers and professional singers, and the cure is also recommended for "lymphatic" children and for chronic bronchitics. The climate is cool and bracing in May, June, and September, and there are charming walks and endless interesting motor runs in the neighbourhood. Fast trains do the journey from Paris in about ten hours, and there is comfortable and unpretentious hotel accommodation.

Uriage.

The next spa to be visited was Uriage, which occupies one of the most beautiful sites in the French Alps, being surrounded by wooded heights which protect it from winds and give it the calm and peaceful characteristics of Alpine climates. The beginning and end of the season—i.e., June and September—are recommended as the best time to visit the station, as the bathing establishment is less crowded and the hotel prices more moderate. There are two springs, (1) an iron spring which contains bicarbonate of calcium and the sulphates of calcium and magnesia, and (2) a sulphur spring which has a constant temperature of 73° F. at the source, and contains hydro-sulphuric acid and a small proportion of sodium monosulphide. The waters, especially the gases which they contain, are regarded as radio-active in a high degree. The bathing establishment is modern and well-equipped. The Uriage waters claim to be highly tonic in their character, and are strongly recommended for neurasthenic conditions. They are useful for scrofulous children and congenital syphilis, and glandular diseases are much benefited by their use. The internal and external exhibition of the Uriage waters is attended by marked results in various skin diseases such as eczema, impetigo, lichen, psoriasis, and acne, but it is probably the treatment of syphilis by the Aachen method of rubbing, combined with the use of the sulphur springs, which chiefly commends the spa to British physicians. The Uriage water seems to facilitate the absorption and to aid the action of the mercury. Attached to the Pump Room is an extensive park, with a tennis club and a golf links. There are numerous hotels, and many of them are first class.

Allevard-les-Bains.

Situated at an altitude of 1472 feet in a charming valley in the midst of the Dauphiny Alps, is Allevard-les-Bains. Notwithstanding its surroundings, the station is remarkably free from the mists which are so frequent on Alpine slopes. The characteristic of the water is the presence of sulphuretted hydrogen, and the great specialty of the spa is cold inhalations in the form of a fine spray. The water is also employed as vapour baths and local douches, and a feature of the establishment is aromatic baths made from decoctions of soothing or sedative plants. The clinical indication of Allevard is diseases of the nose and throat, and, indeed, the spa unites many advantages—an agreeable climate, beautiful scenery and excursions, and a liberal supply of water remarkably rich in H_2S.

Brides-les-Bains and Salins Moutiers.

From Allevard it is only a two hours' run to the twin resorts of Brides-les-Bains and Salins Moutiers in Savoy. These are two health resorts situated in the heart of the "Tarentaise," a part of Savoy comparable in many ways with the most beautiful parts of Switzerland. Salins is situated at an altitude of 1500 feet and a distance of one mile from Moutiers, and Brides at an altitude of 1800 feet two miles further on.

The waters of Brides and Salins each have their particular properties, but their combined employment often gives excellent therapeutic results. Brides is the French rival of Carlsbad and Marienbad, and its situation at the confluence of two mountain torrents tends to produce a tonic and bracing climate. The Brides water comes from a thermal spring at a temperature of 95° F., and its action is laxative, tonic, and diuretic. Its essential contents are sulphate of sodium, sulphate of magnesium, chloride of sodium, and sulphate of calcium. The principal indications for the Brides water are obesity and hepatic complaints and gastro-intestinal diseases, especially constipation with intestinal atony.

The cure at Brides is recommended for what the French love to call lymphatic children, and for convalescents from exhausting diseases, such as malaria. Local douches, maintained at a constant temperature by an automatic apparatus, are also used in the treatment of various gynæcological conditions, such as metritis and leucorrhœa.

Salins Moutiers is the French rival of Nauheim and Kissingen, and has been called the Thermal Sea of the Alps as its enormous yield of water (six million litres a day) permits its use as running water in both swimming and private baths. The temperature of the spring is 95° F., and its essential contents are chloride of sodium (12½ g. per litre), carbonate of iron, arsenate of sodium, carbonic acid, and what, for want of a more exact term, are described as radio-active substances.

These two charming resorts seem to be peculiarly adapted for Anglo-Indians, and the type of patient from tropical parts of our Empire who, before the war, used to flock to Carlsbad and Kissingen.

Fayet St. Gervais.

The spa is situated on slopes rising to an altitude of 1968 to 2788 feet on both banks of the river Bonnant, and Mont Blanc raises its snowy peak in the near distance. All the characters of a well-sheltered mountain climate are found. The town has an excellent water-supply of great purity, and all the amenities which an efficient municipal administration can provide. The springs and the bathing establishments are at Le Fayet, and there are three sources: (1) the Gontard; (2) the de Mey, both saline springs; and (3) the Guéridaud, a sulphur spring. The saline waters are at a temperature of about 104° F., and contain 5 g. of solids to the litre, the salts consist of sulphates of calcium soda and lithia, various bromides, silicate of sodium, and it is claimed that they are the most highly lithiated waters in Europe. The Guéridaud Spring also contains small quantities of hydrogen sulphide and of glairin. The St. Gervais waters are indicated in various arthritic troubles, more especially in those cases which are associated with hepatic, asthmatic, and cutaneous manifestations. The Guéridaud spring permits of its employment in the treatment of chronic skin diseases, where a most highly sulphurated water would be contra-indicated, and it is also, like other sulphur waters, used with benefit in various forms of rhino-pharyngitis. The climate of the spa is both soft and bracing, and a stay at St. Gervais often gives excellent results in neurasthenic conditions, and its bath appears to exercise a direct sedative action upon the glandular elements in delicate and nervous children who appear to thrive in this charming valley. Taken by the mouth the waters are diuretic, and mildly laxative and depurative.

St. Gervais is just 12 hours on the direct line from Paris, and the starting point of the Chamonix Martigny railway and of the funicular to Mont Blanc, so that apart from the local attractions of a fine park and numerous delightful walks, it is a splendid centre for excursions into the most interesting parts of the French and Swiss Alps.

Evian.

Evian is one of the principal towns of the Savoy, picturesquely situated on the slopes of the hills rising from the French shores of the Lake of Geneva. It nestles in a sort of amphitheatre which shelters it from high winds, and is kept cool in summer by the fresh breezes blowing from the mountains to the lake. The local *corps médical* consider that the spa owes much to its agreeable climate, which is tranquil without being relaxing, and produces very beneficial effects in various pathological conditions associated with nervous irritability or excitement. The springs of Evian are divided into several different groups, the principal one of which includes the celebrated Cachat Source, which is a cold, non-gaseous but highly agreeable water; it is only weakly mineralised, as it contains less than half a gramme of alkaline carbonates to the litre. The cure depends on the highly diuretic action of the water, which is taken in the morning fasting and between meals. The volume of urine passed after drinking the water often exceeds to a remarkable degree the amount of fluid ingested, and it is on this flushing of the intestinal and urinary passages that the treatment depends. All patients are advised to drink the water in the horizontal position, and to remain lying down for an hour or two afterwards to encourage diuresis. The Cachat water is delivered at the hotel in charming stone containers to enable clients to carry out the treatment with the minimum of discomfort. The clinical indications for a visit to Evian are numerous, but gout in its many manifestations, perhaps, stands at the head of the list. Next in importance are genito-urinary disorders where benefit may be expected from a careful régime, and diuresis promoted by a pure and efficient mineral water. Some forms of dyspepsia and colitis, especially when accompanied by diarrhœa, and a large range of hepatic conditions where the more drastic cure at Vichy is likely to be badly borne, do well at Evian. Neurasthenics and children and adolescents of neuro-arthritic parents who respond badly to home treatment are often " cured " by a course at Evian ; whilst the station specially caters for what the French politely term " plethoric gourmands," with whom supervision of the dietary and a thorough " washing out " by the waters yield excellent results in reducing weight and arterial tension. Evian is essentially a gay and fashionable spa and is resorted to annually by *le monde chic* of all Europe. It has fine hotels to which access from the lake side, where the casino is situated, is provided by a funicular service. Besides the magnificent Pump Rooms of the Cachat Source, there are a number of subsidiary establishments on the borders of the lake, and inland surrounded by the fine chestnut trees for which the district is famous, where the fashionable crowds can be readily avoided.

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[1] Office Français du Tourisme: Services des Stations Thermales, 56, Haymarket, London, S.W. 1.

Divonne-les-Bains.

The Jura mountains are much less imposing than the Alps, but have a charm all their own. Divonne is situated on their eastern slopes, overlooking the plain and Lake of Geneva. Its altitude is 1685 feet, and it enjoys an equable and sunny mountain climate which enables it to keep open all the year round. The spa is in some ways unique, as its waters are neither warm nor mineralised ; *au contraire*, the springs maintain a temperature of 43° F. all the year round and contain no mineral salts. The bathing establishment is well organised, and hydrotherapy is associated with various other forms of treatment, including heliotherapy and psychotherapy. Divonne specialises in the treatment of various nervous conditions including genital weakness, and the peace and quiet of the surrounding country render it well adapted for rest cures. There is a good first-class hotel, and several others less pretentious, and its position makes it an excellent centre for excursions in the summer, while ski-ing and tobogganing are to be obtained during the winter on the neighbouring mountain slopes.

Salins-du-Jura.

Salins-du-Jura lies in a pretty valley, and is somewhat unique as its waters are only used externally. The springs are so rich in chlorides, and especially sodium chloride, that they are used commercially for the manufacture of common salt. The water is used both before and after the commercial process. After the extraction of the chloride of sodium, an oily, yellowish fluid is left which is styled the *Eaux Mères*, and is employed by itself for compresses and douches, or used to reinforce the spring water. The chief therapeutic indications for the Salins cure are various forms of surgical tuberculosis and some gynæcological conditions, such as metritis. There is no first-class hotel, but for visitors with modest tastes there is ample second and third-class accommodation.

Besançon.

The last spa to be visited was Besançon. La Mouillère is a sort of suburb separated from the town by the river Doubs and the Micaud road. The springs of Besançon, a fine town with numerous industries and a medical faculty of its own, are situated about three miles outside the town, and the water is piped into a centrally situated thermal establishment. The springs are saline in character, the chief constituent being common salt, but there are marked traces of bromides and iodides. Besançon specialises in children's diseases, and claims to be particularly suited for delicate children when there are contra-indications to sea air. The spa is also recommended for a long list of gynæcological conditions, including habitual abortion and sterility. There are two excellent establishments on the surrounding mountain slopes, where children who cannot be accompanied by their parents are treated. The children receive the cure at the baths and are given graduated exercises and a form of open air treatment under charming climatic conditions. Besançon offers all the amenities of life in a fine old French town, and there are numerous walks and endless excursions into the picturesque Jura.

TWO IMPORTANT HEALTH REPORTS.

(1) NORTH-WEST FRONTIER PROVINCE, INDIA.

The population of this Frontier Province in 1921 was found to be 2,135,573 ; the trans-border tribal tracts are not included in this figure, census enumeration not being practicable ; " the present agent, the chaukidar, is the best obtainable at the price, and a better cannot be substituted without an enormous increase in cost. Such a reform is outside practical politics at the present time." The birth-rate was 23·7, as compared with 28·6, the average for the five years, 1917–21 ; the actual decrease in numbers was greatest in Hazara district, where the births recorded were only 11,552, compared with 17,793, the average for 1917–21. Lieut.-Colonel William Anderson, I.M.S., Chief Medical Officer and Director of Public Health, who presents this report,[1] considers that the decrease in notified births in 1922 (10,349, as compared with the quinquennial average of 61,090) may be due to " the unfavourable effect of the actual scarcity which existed in 1921, and of the very general prevalence of malaria in that year that still continued." The birth ratios varied from 19·7 per 1000 in Hazara district to 29·9 in Dera Ismail Khan. The infantile mortality was 151·5 per 1000 births, a considerable improvement on the quinquennial average of 191·9 ; in the other provinces of India the ratio varied from 139·91 in Bihar and Orissa to 228·73 in the Central Provinces, the Frontier Province showing a lower ratio than any other except Bihar and Orissa.

Death-rates and Conservancy.

The general death-rate (21·7, as compared with 35·4, the mean ratio for the quinquennium 1917–21) showed a great improvement. This was chiefly due to the decline in influenza and malaria ; the ratio was lower than in any other province in India, Punjab coming next (22·07), and Central Provinces having the highest ratio (29·31). In the rural circles, embracing the greater portion (1,923,148) of the population, the mortality ratio was 21·26 per 1000, as compared with 35·57, the quinquennial average ; in the towns the respective ratios were 25·55 and 33·94 ; there was, therefore, a great improvement all round, but most marked in the dwellers in the country. Among the Indian non-military population (32,902) living in cantonments the mortality was only 8 per 1000 ; for the majority (17,003) living in Peshawar cantonment the ratio was only 1·58. A striking tribute to the efficiency of cantonment sanitation and standard of living is afforded by these figures. For Peshawar district as a whole the mortality was 18·8 ; for the rural circles 17·16, and for the city 33·67 per 1000 ; yet among the same (or a similar) class of population living in the cantonments the death-rate was only 2, or more exactly 1·58, per 1000. Lieut.-Colonel Anderson states that the high mortality in Peshawar city " is directly traceable to the very unsatisfactory conservancy arrangements which exist. Not only are the collection and transport arrangements defective, but the method of disposal results in the breeding of millions of flies in close proximity to the city walls. A great deal of the sickness which prevails is preventable, and as the Peshawar municipality has the necessary funds at its disposal its apathy in taking steps to improve its conservancy arrangements is lamentable. At Abbottabad, where the conservancy arrangements are the best in the province, the death-rate was least—namely, 11·01, less than one-third of that in Peshawar. The other three towns in Hazara district where sanitary arrangements are very defective [Nawanshar, Baffa, Haripur] have a higher death-rate [34·76, 25·78, 32·09 respectively] than any other towns in the province, excluding Peshawar. These facts speak for themselves."

Epidemic Disease.

The province was exceptionally free from epidemic disease during the year reported on. Cholera caused 92 deaths (0·04 per 1000, as compared with 0·81 per 1000 for the previous five years) ; of the total 129 cases 69, with 53 deaths, occurred in Peshawar city (giving a mortality ratio of 0·67 per 1000), and four deaths were reported in the adjoining Becketganj-Khawjaganj " notified area." The health officer considered that in all the Peshawar cases the exciting cause was unripe or over-ripe fruit ; experiments by Lieut.-Colonel F. P. Mackie, I.M.S., showed that cholera vibrios could be recovered from the interior of melons injected seven days previously, and from tomatoes and cucumbers injected three days previously. He emphasised the necessity for avoiding any damaged or bruised fruit during the prevalence of cholera. Anticholera inoculation was carried out, with a total of 1266 cases. Small-pox caused only 104 deaths, the quinquennial average having been 800 ; the mortality ratios were 0·05 and 0·37 respectively ; in the rural circles the ratio was 0·02, Hazara and Bannu being quite free ; in the towns the ratio was 0·34 and at Peshawar there were 54 deaths (0·68 per 1000); nothing is stated as to the condition of these cases, whether vaccinated or not. There was a definite decrease in fever mortality in all the "settled districts" throughout the province, the deaths registered from this cause numbering 39,984, as compared with the five-year average of 63,846; in Bannu district the ratio was only 14·22; in Hazara it was 23·25; for the whole province 18·72 per 1000. Relapsing fever had not been returned separately in previous years; in 1922 401 cases with 205 deaths were recorded in Peshawar, Kohat, and Dera Ismail Khan districts, the spirochæte being found microscopically in the blood; "as the great majority of the rural population are lice-infected, the extension of relapsing fever is easily explained. It is probably imported by Powindahs, who come across the borders in large numbers during the cold weather. They are invariably verminous and extremely insanitary in their habits." Plague prevailed in Peshawar city and to a slight extent in the district from May to July inclusive; the total cases during the year numbered 204, with 123 deaths (0·1 per 1000); in Peshawar city there were 188 cases and 115 deaths, the remainder occurring in the neighbouring villages. There was also one case (fatal) at Kohat. Out of 8404 rats examined 47 were found to be infected; 212 rat fleas captured in Peshawar and examined at the Kasauli Institute were all found to be *Xenopsylla cheopis*. "Since their appointment in 1913 the cost of maintenance of health officers has been met from provincial revenues. This year, owing to the need for retrenchment the local government decided that this expenditure should be borne by the local bodies for whom the health officers work." Peshawar and Dera Ismail Khan have agreed to this arrangement; "the other municipalities have agreed to pay a monthly allowance to a local assistant or subassistant surgeon in Government employ to do the work of a health officer in addition to his other duties." The responsibility for necessary public health investigation and action must nevertheless remain with the Provincial Government.

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[1] Peshawar: N.W. Frontier Province Govt. Press, 1923.

A large and increasing amount of work has been done in the provincial bacteriological laboratory under Assistant-Surgeon H. D'Silva; 10,244 pathological specimens were examined during the year, and much interesting research carried out in connexion with autogenous vaccines, which were tried in 55 cases with marked success. Lieut.-Colonel Anderson concludes his report with the remark that "there might be much more progress if deputy commissioners would, to a greater extent, take a personal interest in the carrying out of measures recommended by the public health authorities." This is quite true, and happily it is frequently, if not generally, the case that these officers do take such an interest; if this is not so the public health is likely to suffer, and the responsibility for this would undoubtedly lie, in a greater or less degree, with the executive authority.

Hospitals and Dispensaries.[2]

The report on Hospitals and Dispensaries in the North-West Frontier Province for 1922 deals with the working of 80 medical institutions. Owing to the need for financial retrenchment seven dispensaries had to be closed, while three new dispensaries were opened for the South Waziristan and Tochi Scouts. These institutions are divided into three groups, in the first of which, comprising what are known as "State Public, Local Fund, and Private-aided" hospitals and dispensaries, 47 in number, a total of 12,792 in-patients and 798,479 out-patients were treated, as compared with 11,434 and 719,537, the averages of the preceding quinquennium. The daily average of in-patients was 486 and of out-patients 3509, as compared with 421 and 3367 for the quinquennium. The year was exceptionally healthy in this province, the mortality among the general population being only 21·7, compared with 35·4 per 1000, the quinquennial average. Malaria was much less prevalent than usual. "It has been found that an increase of malaria occurs about a fortnight after the minimum wet bulb thermometer reaches 18° to 22° C. It is only between these temperatures that the malarial parasite exists in the circulation in a form that is undergoing further development in the mosquito and so being spread." In Peshawar such a temperature range prevails from the last week in April to the first week in June, and from the second week in September to the first week in October. Malaria in this province occurs especially in May and June and in the autumn. Cinchona febrifuge, costing less than a third of the price of quinine, has been found by Major H. W. Acton, I.M.S., and other observers to give a higher percentage of cures than quinine, and has been largely used with very good results. Only two cases of cholera were admitted to hospital, and ten treated at their homes. A small outbreak of plague occurred in Peshawar district, 14 cases being treated at their homes; no death is recorded.

In the second group, "State Special" hospitals, including those for police, frontier constabulary, militia and scouts, canals and railways, numbering 28, there were 162,766 patients under treatment, a large increase on the quinquennial average of 118,803; this was due to the opening of three railway construction hospitals in the Khyber in 1921, and to the great increase in the strength of the Tochi and South Waziristan Scouts. The third group, "Private non-aided" institutions, consists of the Mission Hospitals at Peshawar, Dera Ismail Khan, and Karak, the Zenana Mission at Mardan, and the Victoria Diamond Jubilee Hospital at Peshawar; in all 43,027 patients were treated, indoor and outdoor. The term "dispensary" is used for what would be correctly be called "hospital," as in-patients are included in the numbers stated. Lieut.-Colonel Anderson, in reviewing the year's work, notes that on the whole the year was exceptionally healthy, and regrets that need for retrenchment necessitated a reduction of four in the number of dispensaries maintained, and of 14 in the cadre of sub-assistant surgeons. Nevertheless the hospital attendances were more than 116,000 in excess of the quinquennial average and the operations performed increased by nearly 5000, this being "a reliable criterion of the popularity and utility of a hospital."

Jails.

In the jails and judicial "lock-ups" of the Frontier Province the total prisoners of all classes confined in 1922 numbered 13,494, as compared with 12,271, the quinquennial average for 1917–21; and the daily average prison population was 3424, against 2929 in the preceding year. Serious overcrowding existed in all jails and lock-ups, on account of transfer to the Andaman Islands being stopped, and the number sent to other provinces greatly reduced. Owing to this large numbers of prisoners sentenced to labour could not be employed for lack of factory accommodation, as many as 400 such being idle in Peshawar jail at one time; nevertheless the cash profits amounted to Rs.52,649, and the earnings per head of those employed in the manufactories to Rs.121.9.0, as compared with Rs.24,597 and Rs.56.6.0, the quinquennial averages for 1917–21. "The object of the jail department is to obtain a regular market for the articles it manufactures. . . . Larger and regular orders from public consuming departments are required." The overcrowding occurred only among male prisoners, their daily average numbering 3257, while the total accommodation was for 2509 only; the excess number were kept at night in tents and worksheds. The total admissions to hospital numbered 4351, giving a ratio of 1370 per 1000 of average strength; for the quinquennium, 1917–21, the figure 2172 is stated both as the number and as the ratio per 1000 of hospital admissions—an obvious error, for the correction of which figures are not available in the report. The average constantly sick rate for 1922 was 40, and mortality 26·45 per 1000; "on the whole, the health of the prisoners was good. Of the 72 prisoners who died, 51 had been in prison for less than one year." (Page 13.) On the same page, however, and in Statement No. XIV., p. xxxvii., the total deaths are stated as 84 (including one female); the number 72 refers to male convicts only. Malaria was prevalent in Peshawar jail, but of a mild type. Of 1626 admissions to hospital only two cases proved fatal, and these were complicated with cirrhosis of the liver and dysentery respectively. Out of 1450 prisoners examined in this jail 107 had enlarged spleen. Dysentery, so frequently a jail scourge, caused only 32 admissions and 2·22 deaths per 1000 average strength among the convicts; at Abbottabad these ratios were 74 and 12·34 respectively. Not a single case of cholera occurred in any jail throughout the year. Lastly, of the 2960 convicts discharged during the year 44·8 per cent. had gained, and 26·5 per cent. lost in weight, a satisfactory testimony to the general health arrangements of the jails, though not equal to the quinquennial average results (1917–21), which showed a gain in 51·5 and a loss in 23·3 per cent. Lieut.-Colonel Anderson concludes his report[3] by emphasising the urgent need for a central jail, and an increase in the staff of warders; chronic overcrowding and lack of factory accommodation are also conditions needing immediate attention.

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(2) PUBLIC HEALTH IN TANGANYIKA.

THIS territory consists of that portion of the former colony of German East Africa which, under the Treaty of Peace, the principal Allied and Associated Powers agreed should be administered under a mandate by His Britannic Majesty. The territory extends from the Umba River on the north, to the Rovuma River on the south, the coast line being about 500 miles in length, and includes the adjacent islands; the total area is about 365,000 square miles. The seat of government is Dar-es-Salaam (population approximately 25,000). Portions of the great lakes of Central Africa are included in the territory—viz., the southern portion of Lake Victoria, the eastern shores of Lake Tanganyika, and the northern and north-eastern shores of Lake Nyasa ; there are four smaller lakes and numerous rivers. The highest points in the territory are in the north-east, where are the extinct volcanoes, Kilimanjaro, which rises to 19,720 feet, and is snow-capped, and Mount Meru (14,960 feet) ; in the south-west are the Livingstone mountains, where the highest peak is over 9000 feet. The system of administration is to support and supervise, with the least possible interference, the native authority as existing or established. The population, as shown by the census taken in 1921, was : Europeans, 2447, of whom 1598 were British subjects ; Asiatics, 14,991 ; and natives, 4,107,000. No statistics relating to native births and deaths are available. The population of the up-country districts is almost certainly increasing, but the birth-rate on the coast is low. The sterility of the Swahili women is due to immorality, and, to some extent, probably, in-breeding.

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[2] Peshawar Government Press, 1923.

[3] Administration Report on Jails, N.W. Frontier Province, 1922, Peshawar Government Press, 1923.

Superstitions and Habits.

The official report for 1922 records that an Ordinance making witchcraft a punishable offence has been passed to check the activities of the medicine men. To the influence of these may be attributed the barbarous practice of infanticide, which prevails among the Wapare in Moshi district. Children born with some abnormality or considered by the diviners to be unlucky for a great diversity of reasons, such as the cutting of the lower before the upper teeth, or the offspring of parents who have failed to undergo initiation into certain tribal ceremonies, are done to death by deliberate starvation and neglect, suffocation, poisoning, or injury at birth, or, if a less obvious method is required, by exposure to the unhealthy climate of the low country. In general, the parents would not of their own accord abandon such children, and in many cases have preferred to give them away to strangers, but they are more or less compelled by popular opinion, or by the fear of incurring blame for any general misfortune that may befall the community, such as a drought or epidemic. Fermented liquor is manufactured by natives from various materials, such as the cocoanut palm, honey, grain, &c., and its consumption at most native ceremonies is demanded by tribal custom. While its sale in townships can be controlled, prohibition or restriction in the villages is well-nigh impossible. Taken in moderation, native beer is a harmless concoction, and is part of the daily food ration of the old men, but over-indulgence in it leads to quarrels, and is responsible for the majority of crimes of violence. The chiefs are empowered to prevent the supply of liquor to young persons, and to restrict drinking bouts. Natives in the Mwanza district were discovered distilling a potent form of spirit from bananas on Ukerewe Island, whence it was carried by canoe to the mainland and thence retailed ; the culprits were brought to justice. A cottage hospital was opened at Moshi, and a European ward added to the Mwanza hospital, nursing sisters being posted to each of these districts. A block of the Tanga hospital was converted for the reception of Asiatics, and the accommodation at the native hospitals at Dar-es-Salaam and Iringa was enlarged. During the year 12,400 native in-patients and 97,700 out-patients were treated in Government hospitals, at which a medical officer or sub-assistant surgeon was stationed. In many of the sub-districts, where no regular medical establishment exists, minor ailments were attended to by Indian compounders or native dressers. Appreciation by the native of the value of medical aid increases, but the innate conservatism of the unsophisticated often keeps them from presenting themselves for treatment until their own medicines have failed, and the disease has made headway. Praises must be given to the missions, which perform a great deal of excellent work, and in many cases include qualified doctors or nurses among their staffs.

Infectious Disease, Endemic and Epidemic.

Of infectious diseases plague, small-pox, and cerebrospinal fever are endemic in the territory. In the Singida sub-district of Dodoma, where plague has certainly existed since 1918, there were 23 deaths from the disease, as against 149 in 1921. Following the return of a native from that area to his home, a disease which was almost certainly plague was reported at Shinyanga in the Tabora district ; 13 deaths occurred, but prompt measures were taken, and no recrudescence has been recorded ; 46 deaths from small-pox were notified from various districts. Vaccinations steadily proceed, and 178,750 doses of lymph were prepared in the laboratory and distributed. An outbreak of sleeping sickness in the Mwanza district caused grave anxiety during the year. This epidemic has been proved to be due to infection with *Trypanosoma rhodesiense*, the vector being a tsetse of the morsitans group. This occurrence of the Rhodesian form of sleeping sickness many hundreds of miles north of any previous recorded outbreak is ominous, as very large areas of the territory and neighbouring countries are infested with *Glossina morsitans*, and a generalised infection of tsetse throughout these areas would be disastrous. Fortunately this epidemic occurred in an isolated flybelt, and the energetic measures instituted since the disease was discovered appear to have been successful in controlling the outbreak. The natives have been removed to fly-free areas, and the patients and suspected cases segregated in isolation camps, where 41 remained at the end of the year. There is no doubt that the disease had been present in the area for three or four years, and was responsible for several hundred deaths which the natives had attributed to some form of elephantiasis. Venereal disease is very common in the larger towns, and reports indicate that the Mwanza and Bukoba districts are heavily infected. Syphilis is responsible for a large percentage of the heavy infantile mortality, and to an even greater extent for reduction in the birth-rate. The more progressive chiefs are aware of the dangers, and, in some districts, are encouraging infected persons to go into hospital, while the tribal courts in Dodoma have started to impose a fine of ten head of cattle on any man found proved to have communicated the disease. Most districts are malarious, and the spirillum tick is widespread in certain areas.

A Variety of Climates.

The climate varies greatly, according to the height above sea-level. Roughly, four climatic zones can be distinguished (though even among these there are considerable local variations), viz. : (1) The warm and rather damp coast region, with its adjoining hinterland ; here conditions are tropical, though not unpleasant except just before and during the rainy seasons when the heat is trying and the atmosphere humid ; the average yearly temperature is 78° F. (2) The hot and moderately dry zone between the coast and the central plateau ; this is characterised by low humidity of atmosphere, less rain, and a temperature rather lower, but with greater daily and yearly variations. (3) The hot and dry zone of the central plateaus between 2000 feet and 4000 feet in height ; the prevailing characteristics are low humidity, little rainfall, and a fairly high mean temperature ; the heat is dry, but not so trying to the European as the moist and steamy warmth of the coast, while the nights are invariably cool. (4) The semi-temperate regions around the slopes of Kilimanjaro and Meru, of the Usambara highlands, the Ufipa plateau, and the mountainous areas of the south-west (5000 feet to 10,000 feet) ; frosts occur at the higher altitudes, and the nights are cold ; these districts enjoy a bracing climate, and alone can be considered healthy for Europeans, but prolonged residence in these altitudes is apt to produce nervous strain, even though physical fitness is maintained. There are two well-defined rainy seasons annually. Generally speaking, the long rains begin in February or March, and last for two or three months, while the short rainy season is in October to November, but the rainfall is low for a tropical country, and droughts are not infrequent.

THE PUBLIC SCHOOLS YEAR BOOK.[1]

THE Public Schools Year Book for 1924 is the thirty-fifth of the annual series. It is described as a comprehensive guide to public and preparatory schools, universities, professions, all public services throughout the Empire, and business careers, and indeed bears out the claims made for it. It is to the short article on the medical profession that we naturally turn ; the object of this article is to outline to the intending student what steps he should take to ascertain the different methods of entering our profession, and also to give him some idea of the various careers that are open to him, after he has obtained his qualifications. The information given appears to be accurate and the advice sound as far as it goes ; for further details the prospective student is referred to the Students' Number of THE LANCET. The medical scholarships obtainable at various institutions are set out clearly in tabular form. Parents who wish to choose schools, universities, or professions for their sons cannot do better than consult this manual.

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[1] Edited by C. H. Deane, *M.C.*, B.A. ; A. P. W. Deane, B.A. ; and W. A. Bulkeley Evans, M.A., O.B.E. 1924. London : H. F. W. Deane and Co., The Year Book Press, Ltd. Pp. 832. 10*s*. 6*d*.

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Observations

ON A

COUNTY VENEREAL DISEASES SCHEME:

THE DEFECTS IN ADMINISTRATION.

A Communication to the Imperial Social Hygiene Congress (V.D. Treatment Section) on May 14th, 1924,

BY J. J. BUTTERWORTH, M.D. MANCH., D.P.H.,
MEDICAL OFFICER OF HEALTH, LANCASHIRE COUNTY COUNCIL.

THE county of Lancashire presents every kind of problem from the administrative point of view with regard to venereal diseases. The north is almost entirely rural, devoted to dairy farming and grazing, thinly populated, and broken up in its northernmost part by hills and mountains into remote valleys to which access is difficult. In the west are the flat and level areas of the rich agricultural lands of the Fylde and West Lancashire. In the east, south, and south-west are the densely populated areas of industrial Lancashire.

The extreme length of the county measured in a straight line on a map is 76 miles, and its extreme breadth is 45 miles, but by existing means of transport its actual length is about 120 miles and its breadth about 60 miles. The following are the gross figures:—

Geographical County.

	Area.	Population.
Geographical county	1,194,555	4,927,484
17 county boroughs	140,047	3,181,693
Administrative county—i.e., are under administration of county council for venereal diseases purposes—		
19 municipal boroughs	86,426	580,924
83 urban districts	255,458	922,749
19 rural districts	712,624	242,218
Total administrative county	1,054,508	1,745,891

Rateable value, £11,228,326. 1*d.* in the £ produces about £43,500.

The predominantly industrial character of the county is shown by the following figures:—

Occupations of Persons (Geographical County).

(Census, 1921.)

	Males.	Females.
Total population	2,332,931	2,594,553
Number of persons not engaged in occupations	189,522	1,233,336
Number of persons 12 years of age and upwards engaged in occupations	1,614,243	833,717
Approximate number of persons occupied—		
Metal workers	218,000	8,000
Transport	213,000	9,000
Textile workers	183,000	317,000
Commercial occupations	140,000	72,000
Clothing and textile goods	33,000	79,000
Mining and quarrying	110,000	2,000
Building and allied trades	77,000	—
Clerks and draughtsmen	81,000	50,000
Wood, furniture, &c.	64,000	4,000
Warehousemen, storekeepers, &c.	48,000	24,000
Professional occupations	31,000	38,000
Agricultural	48,000	5,000
Public administration and defence	31,000	6,000
Food, drinks, &c.	22,000	20,000
Paper, books, &c.	21,000	16,000

Cotton Trade.—Over 1000 spinning mills employing 200,000 persons; 250,000 persons engaged in weaving and finishing cotton goods. Total population engaged in textile work, 500,000.

Coal Mining.—Twenty-five million tons mined annually in Lancashire. Estimated amount of coal still available in the county, 4,000,000,000 tons.

Stone and Ore Mining.—Stone or rock or metallic ores mined annually in the county, 3,750,000 tons. Persons engaged in mines and quarries, 112,000.

Agriculture.—Total area of county, 1,200,000 (approx.) statute acres. Area cultivated, 800,000 acres. Persons employed in agriculture, 53,000. Area of Lancashire farms, average 36·5 acres.

SYNOPSIS OF COUNTY SCHEME.

(A) *Treatment Centres.*

Arrangements for the treatment of venereal diseases have been made by the county council with 22 hospitals and three ad hoc clinics in the geographical county. These treatment centres, with one exception, are situated in the county boroughs and are not evenly distributed geographically, being mainly in the thickly populated areas of south-east Lancashire. The residents in many of the rural and smaller urban districts have to travel considerable distances for treatment. There are several other hospitals in the administrative county which might be used for the treatment of venereal disease, but it has not been possible, for various reasons, to make suitable arrangements.

Table I. is a synopsis of the work carried out in the treatment of residents in the administrative county at the centres since the beginning of the scheme in 1918:—

TABLE I.—*Number of Persons Resident in the Administrative County* who have Attended the Treatment Centres.*

Year.	No. of residents in the administrative county area attending treatment centres for the *first* time and found to be suffering from—					Total No. of attendances of county residents at out-patient clinic.	Aggregate No. of in-patient days.
	Syphilis.	Soft chancre.	Gonorrhœa.	Conditions other than venereal.	Total.		
1918	674	12	173	104	963	9,010	950
1919	1510	94	729	408	2741	22,732	2838
1920	1433	85	802	496	2816	31,096	2490
1921	1104	33	622	414	2173	32,739	2367
1922	701	17	573	399	1690	29,420	1490

* It might be well to repeat that the term "administrative county" means the whole of the geographical county, excluding the 17 county boroughs.

It will be observed that the number of patients is tending to decrease, and the average number of attendances to increase. It has been found by experience that very few children or babies are presented at these clinics.

Period of Attendance at the V.D. Clinics.—From the returns made to the County Public Health Department from certain of the venereal diseases treatment centres in Lancashire during the six years 1918–23 statistical details have been collated. It has not been found possible from the information available to include in them the large treatment centres in Liverpool and Manchester; and from certain other institutions the returns do not cover the whole period of six years. In most instances the agreements with the treatment centres are between the management of the institution and the county borough council, and the county council has to rely for statistical details on returns, often incomplete, supplied by the county borough health departments.

I have endeavoured to ascertain, from the data available, the proportion of the total persons attending clinics who *complete* the full course of treatment, or who cease to attend *before* completion of the course. The statistics here quoted refer to 23,270 persons—males 17,164, and females 6106—who attended certain Lancashire treatment centres, for which complete returns have been received, between the date of the commencement of the county scheme (1918) and Dec. 31st last year.

The following tabular statement shows, as far as the data available permit, the gross percentage of persons who actually completed the course and attended the final tests, contrasted with those who ceased to attend at various stages of treatment.

TABLE II.—(Years 1918–23.)

—	Syphilis.		Soft chancre.		Gonorrhœa.	
	M.	F.	M.	F.	M.	F.
	%	%	%	%	%	%
Persons who ceased to attend the clinic at various stages of treatment and before the *final* tests as to cure	79·3*	80·5*	57·5*	71·9*	60·7*	61·0*
Persons transferred to other treatment centres after treatment	6·4	4·7	3·6	2·2	8·9	10·4
Persons discharged from the clinic after completion of treatment and observation ..	14·2	14·7	38·8	25·8	30·3	28·5

TABLE III.—*Yearly Percentages :—*

(A) Year 1918.

Persons who ceased to attend the clinic at various stages of treatment and before the *final* tests as to cure	80·3*	78·6*	90·9*	—	68·0*	66·6*
Persons transferred to other treatment centres after treatment	—	—	—	—	—	—
Persons discharged from the clinic after completion of treatment and observation ..	19·3	21·3	9·1	—	32·0	33·3

(B) Years 1919 and 1920.

Persons ceasing to attend clinic before completing a course of treatment	45·7	46·3	23·4	41·3	45·0	52·1
Persons ceasing to attend after completion of a course of treatment, but before *final* tests as to cure	36·6	38·1	36·8	35·6	21·7	23·7
Persons transferred to other treatment centres after treatment	5·4	2·7	2·5	—	6·1	4·8
Persons discharged from the clinic after completion of treatment and observation ..	12·1	12·7	37·2	23·0	27·0	19·4

(C) Years 1921, 1922, and 1923.

Persons ceasing to attend the clinic before completing the first course of treatment ..	24·4	24·5	25·6	40·0	33·2	32·1
Persons ceasing to attend after one or more courses but before completion of treatment	30·1	30·5	—	—	1·8	1·4
Persons ceasing to attend after completion of treatment, but before *final* tests as to cure	22·4	22·5	25·1	20·0	21·2	19·7
Persons transferred to other treatment centres after treatment	7·8	6·7	6·4	20·0	10·7	13·3
Persons discharged from the clinic after completion of treatment and observation ..	15·2	15·5	42·7	20·0	32·9	33·3

* Includes a large percentage (in the case of syphilis 35 to 40 per cent.) who completed the course of treatment, but did not attend for the final tests.

Conclusions from the Tables.—As regards syphilis, approximately 50 per cent. of both sexes cease to attend at the treatment centre *before* completing the full course of treatment. During the last three years (1921–23), as compared with 1919 and 1920, there was an increase in the percentage of persons discharged from the clinics *after* completion of treatment and observation, the percentage of the sexes being equal. In gonorrhœa cases the percentage of completed attendances is higher than in syphilis.

(B) *Arrangements for General Practitioners.*

The Lancashire County Council have made arrangements by which medical practitioners practising in the administrative county area can be supplied gratuitously with the necessary outfits for collecting materials for examination from persons suspected to be suffering from venereal disease, and scientific reports upon the materials submitted are furnished to them direct by the pathologist.

The laboratories available for such examinations are :—

Liverpool : The University of Liverpool, City Laboratory and School of Hygiene, Mount Pleasant. (Prof. Beattie.)

Manchester : The University of Manchester, Public Health Laboratory, York-place, Oxford-road, Manchester. (Prof. Topley, Director.)

Burnley : The Borough Health Department Laboratory.

In addition to these laboratories, several of the hospitals carry out portions of the bacteriological work. It is not possible to state the number of patients treated by general practitioners either privately with their own drugs or with arsenobenzol compounds supplied by the county council. It would be interesting to receive from practitioners an annual return of the number of persons treated by them.

Free Supply of Arsenobenzol Compounds.—The county council supply free of charge arsenobenzol compounds to approved medical practitioners, and Table IV. shows the amount of work carried out.

TABLE IV.—*Number of Outfits and Number of Doses of Arsenobenzol Compounds Issued by County Council to Medical Practitioners.*

Year.	No. of outfits issued by county council to medical practitioners.				Result of exam. of specimens forwarded to Manchester laboratories.		Supply of arsenobenzol compounds.	
	Wass. test.	Detection of spirochæte.	Detection of gonococci.	Total.	Positive. Per cent.	Negative. Per cent.	Total No. of practitioners "approved."	Total No. of doses supplied.
1918* ..	195	10	51	256	40·14	59·86	27	269
1919 ..	405	43	62	510	43·33	56·67	65	881
1920 ..	602	18	39	659	34·01	65·99	96	944
1921 ..	951	6	64	1021	27·25	72·75	109	796
1922 ..	580	13	37	630	38·73	61·27	116	517
1923 ..	900	5	61	966	38·97	61·03	123	845

* Portion.

The addresses of the "approved" practitioners show that they are grouped for the most part around the large towns in the vicinity of the venereal disease treatment centres. The greater number of the "approved" practitioners received their training during military service. Practitioners who did not receive training in venereal disease work during the war have not, as a rule, taken up this work, as it is difficult under present conditions to spare the necessary time and money for post-graduate work. Some of these continue to treat syphilis with mercury only. In the course of my work I meet a large number of general practitioners, and those in practice in rural areas and in the smaller urban districts state that they rarely see cases of obvious venereal disease.

EDUCATIONAL WORK.

The County Public Health Department began educational work to combat venereal disease in the year 1917 by the appointment of two organisers—one male and one female—and since 1920 has continued the work mainly by the services of a lady organiser and a panel of about a dozen medical lecturers. The propaganda and educational arrangements have comprised lantern and film lectures in theatres, picture-houses, public halls, &c., talks to mothers in child-welfare centres, and lectures to men and women in clubs, works, institutes, &c. Special courses of lectures in biology have been given by a medical woman to teachers.

Table V. sets out the amount of work carried out in these directions.

TABLE V.—*Approximate Audiences Reached by Propaganda Work Carried Out by the County Council Public Health Department.*

Year.	Lectures and addresses by organising lecturers, &c.			Medical lectures.			Lectures to—		Lantern lectures.	Film lectures.	Works meetings.		Total.
	M.	W.	Mx.	M.	W.	Mx.	Teachers.	Mothers.			M.	W.	
1919	310	910	8,450	2827	4010	500	390	1275	1,890	2,300	2,160	2630	27,652
1920	1914	2,605	1,840	1350	1470	—	710	2004	6,215	3,900	8,210	5906	36,124
1921	2914	3,773	1,875	1290	725	60	350	1318	2,100	122,500	—	66	136,971
1922	—	2,725	360	750	50	200	94	805	1,450	10,820	—	—	17,254
1923	—	3,125	360	1340	—	60	540	—	520	13,400	—	100	19,445
	5138	13,138	12,885	7557	6255	820	2084	5402	12,175	152,920	10,370	8702	237,446

M.=Men. W.=Women. Mx.=Mixed.

I think it can be argued that the campaign inaugurated against venereal diseases during the last few years has already gained a great measure of success in certain directions. In my own county a considerable section of the population, by means of propaganda, has been made to realise the contagiousness and serious results of venereal disease. Table V. shows that we have brought the subject before more than a quarter of a million people during the last five years. The attitude that even the innocent sufferer should be treated as a social outcast has been broken down. Many of the infected persons, by treatment, have been rendered non-infective. The governing bodies of hospitals are beginning to realise that these diseases can no longer be neglected and that treatment must be provided. The best results have been achieved in the treatment of syphilis, particularly in the male.

The facilities in this county for treatment of infected persons are, with more or less difficulty, within the reach of all. The county council has issued, free of charge, over 800 railway vouchers to enable persons to travel from their homes to treatment centres. The campaign against the disease, however, requires development in certain directions.

The greatest defects in a number of the present schemes are (*a*) the lack of proper provision for the treatment of infected children, (*b*) the lack of proper provision for the discovery and treatment of gonorrhœa in the female, and (*c*) the difficulty of providing treatment with sufficient privacy for the respectable woman who objects to have to wait her turn in company which is often very mixed and undesirable. It is mainly with the first two defects that I propose to deal here, as, in a large number of cases the sufferers are innocent victims and therefore most worthy of treatment and consideration.

EXTENT OF THE PROBLEM.

Before discussing any administrative action it is necessary to know something of the extent of the problem.

(A) *Children Suffering from Venereal Diseases.*

These children can be divided into two classes: (1) Children of school age, (2) children under school age.

(1) *Children of School Age.*—About two years ago I instructed the medical men on my staff working in the Lancashire county schools and child welfare centres to carry out an investigation into the incidence of the signs of congenital syphilis in children attending the elementary schools. It was impracticable to use the Wassermann test in the investigation. As the result of the clinical examination of several thousands of children, I formed the following conclusions:—(*a*) That the gross manifestations of congenital syphilis in school-children resident in the rural districts of the county are very rarely seen; (*b*) that the gross manifestations of congenital syphilis are occasionally seen in the routine examination of school-children in the smaller towns (less than 0·15 per cent.); (*c*) there was some evidence that congenital syphilis, which had remained latent, was lighted up by intercurrent disease—thus, one child developed signs of congenital syphilis after measles, and another after the removal of tonsils and adenoids; and (*d*) there were certain cases, but few in number, in which the medical officers thought a Wassermann test necessary before a definite opinion could be expressed.

(2) *Children under School Age.*—The medical officers working in the county child welfare centres are unanimous in stating that they see and suspect the existence of syphilis more frequently in the babies attending the centre than in school-children, but that it is by no means a common disease in these children. They think, however, from the evidence supplied by their health visitors that the disease has its greatest incidence in the premature and ailing infants who die in the first months of life or remain too feeble and ill to attend the centres. In other words, the infected children die off and do not survive till school age. Several of the medical officers express the opinion that syphilis is frequently a cause of stillbirths.

Table VI. shows the number of stillbirths, &c., reported by midwives practising in the administrative county area:—

TABLE VI.

Year.	Total births in county area.	No. of births attended by certified midwives practising in county area.	No. of stillbirths reported by certified midwives.	Percentage stillbirths reported by midwives to total births attended by them.
1914	38,507	21,880	498	2·27
1915	34,595	20,941	392	1·87
1916	32,695	17,069	397	2·32
1917	28,420	15,592	361	2·31
1918	27,736	14,966	305	2·03
1919	28,799	16,240	381	2·34
1920	39,767	21,843	479	2·19
1921	36,558	19,566	443	2·26
1922	32,011	17,046	401	2·35
1923	30,672	15,763	359	2·27

There is a strict supervision of the work of certified midwives practising in the administrative county area, and the record of stillbirths stated above may be taken as approximately correct. "Stillbirths" include all infants born dead after the twenty-eighth week of pregnancy. Table VI. shows that in spite of the great reduction which has taken place in the postnatal causes of infant mortality during recent years, the causes of antenatal death remain as potent as ever.

[Here Dr. Butterworth referred to the work of Dr. J. N. Cruickshank on "Maternal Syphilis as a Cause of Death of the Fœtus and of the New-born Child," recently published by the Medical Research Council (vide THE LANCET, March 22nd, p. 608 et seq.)]

(B) *The Discovery of Gonorrhœa in the Female.*

In the rural and small urban districts of under 20,000 population in a large county like Lancashire the discovery and treatment of gonorrhœa in the female is a very difficult administrative problem. One of the greatest difficulties is our lack of knowledge of the incidence of the disease. The sources of information are meagre. I obtain a certain amount of information as to the occurrence of gonorrhœa in women through the administration of the Midwives Acts.

Table VII. shows the number of notifications of ophthalmia neonatorum received since the year 1914 in connexion with the work of the County Public Health Department under the Midwives Acts:—

TABLE VII.

Year.	Number of notified cases of ophthalmia neonatorum.	Total births registered.	Percentage of cases of ophthalmia neonatorum notified to total births.
1914	273	38,507	0·70
1915	234	34,595	0·67
1916	265	32,695	0·81
1917	233	28,420	0·81
1918	231	27,736	0·83
1919	323	28,799	1·12
1920	464	39,767	1·16
1921	265	36,558	0·72
1922	235	32,011	0·73
1923	208	30,672	0·67

It will be noted that the greatest incidence of ophthalmia neonatorum occurred in the years 1919 and 1920, the period of the demobilisation of troops.

[A table showing for three years the condition of the eyes after ophthalmia neonatorum was included. The figures were obtained by re-visits by the county staff. The table showed for the years 1919, 1920, and 1921 details of all eye cases and of those notified as ophthalmia neonatorum, and included information regarding condition of eyes after a lapse of from 2 to 26 months from the date of the first report, the following up of such cases being regularly made. In the year 1919, of 447 cases 323 were notified as ophthalmia neonatorum. In the year 1920 the corresponding figures were 665 and 464, and in 1921 436 and 265.]

On examination of the details obtained in the inquiries into ophthalmia cases the following facts were ascertained:—

Extending over a period of 6½ years: The average interval of time between the birth of the child and the onset of the disease (ophthalmia neonatorum) was 6·05 days. The interval between onset of disease and the date on the record sent by the midwife to the medical practitioner was 1·36 days. The interval between onset of the disease and the date of notification of the case, under the ophthalmia neonatorum regulations, was 4·29 days. The length of time between the date on the Medical Help Record (first report of the case) and the date a doctor first saw the child (commencement of treatment) was 1·25 days.

The investigations carried out by the inspector of midwives, health visitors, and assistant county medical officers show that many of the severe cases of ophthalmia neonatorum are due to gonorrhœa in the mother, but the data are insufficient to express as a percentage the incidence of gonorrhœa in notified cases of ophthalmia. I also receive certain information from certified midwives. It is their duty under the rules to call in a medical man in cases where they discover purulent discharge in pregnant women. There are 663 midwives practising in the county area at the present time, and the number of records received from midwives in respect of these conditions in the year 1922 for "purulent discharge" was 20. It is unlikely that these figures represent the true incidence of gonorrhœa in pregnant and parturient women attended by certified midwives, but medical practitioners inform me that they also see very few cases in pregnant and parturient women in the rural and small urban districts, and they further state that they see very few cases either in adult males or females. The assistant medical officers and health visitors report to me very few cases of gonorrhœa in females either at the infant welfare centres or during their home visits. It is my experience, therefore, that it is very difficult to estimate, with any approach to accuracy, the amount of gonorrhœa existing in women in the rural and urban districts of Lancashire.

TREATMENT OF WOMEN AND CHILDREN.

The provision of treatment for women and children suffering from venereal disease in a large county with 121 separate urban and rural districts is a difficult administrative problem. The problem in a large town is comparatively easy where there is a well-equipped hospital containing special departments for women, children, and persons suffering from venereal disease such as are seen in the large London hospitals. The gynæcologist seeing a case of venereal disease, or the physician in the children's department seeing a syphilitic child, can coöperate with the director of the venereal diseases department and through the lady almoner knowledge is gained of contacts to be followed up.

In the smaller districts of Lancashire there are either no hospitals, or they are not suitably equipped. The respectable married women generally will not attend the treatment centres provided in the large towns, nor will they take their children. In the textile towns a large number of the women are engaged in industry, and the wife of the coal miner is a hard worker. The provision and cooking of meals for perhaps several workers on different shifts, the care of their working clothing, and the bringing up of a family leave very little spare time for the coal miner's wife.

I think provision for the treatment of syphilis in women and children might be made in certain of the existing child welfare, antenatal, and school clinics where it is possible to make proper arrangements.

In one of the combined child welfare and school clinics in a small urban district in Lancashire I was able for a time to arrange for the treatment of syphilis in children. The final results were good. The numbers would not be large in any particular district, and the patients could be seen regularly by appointment. There could by this method be a close coöperation between school medical and child welfare medical officers, inspector of midwives, health visitors, school nurses, midwives, &c., and the venereal diseases medical officers treating the cases. Ophthalmic cases of syphilis in children, such as keratitis and choroiditis, should be treated by ophthalmologists.

The treatment of gonorrhœa in women in county districts is a much more difficult problem for the following reasons: (*a*) Gonorrhœa requires daily treatment; (*b*) it is not advisable from a surgical standpoint to treat gonorrhœa in the same department at which young children and babies attend; (*c*) there would be a danger of bringing the centre under the label "venereal."

The discovery of a specific treatment for gonorrhœa would simplify the administrative problem in county districts. It is the exacting nature of the present mode of treatment which creates the main difficulty.

A Lecture
ON
ACETONÆMIA AND VOLVULUS OF THE SMALL INTESTINE IN CHILDHOOD.

Delivered at the Hospital for Sick Children, Great Ormond-street, on May 15th, 1924,

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MY subject is, I think, one of particular interest, not only on account of the extreme difficulty there is in clinical diagnosis, but because it touches upon the problem of acetonæmia in childhood, and introduces a group of cases which are of equal importance to the physician and surgeon. To discuss in detail all the aspects of acetonæmia would take me too far, and the particular cases I am dealing with will occupy most of our attention.

CONDITIONS OF OCCURRENCE OF ACETONÆMIA.

A lecture I gave in 1922, on diabetes in the young, dealt with one of the best known of all examples of acetonæmia, for, as you know, in childhood diabetic coma, which is acetonæmic in causation, marks the end of these cases. The usual symptoms you find then are the peculiar odour of the breath, air-hunger, intense weakness and drowsiness, and finally coma, with a urine which gives distinctive tests—namely, the purple colour that results from saturating 5 c.cm. of urine with an equal quantity of ammonium sulphate, and then adding a few drops of ammonia followed by a 5 per cent. solution of sodium nitro-prusside. This shows the presence of acetone and aceto-acetic acid. The purple colour on adding ferric chloride to the urine shows the presence of aceto-acetic acid. The other constituent, beta-oxybutyric acid, gives no easy clinical test. It is, however, only the most severe cases of acetonæmia that drift into the stage of coma; and it must be realised that a certain minor degree is a very frequent occurrence in many different disorders of childhood.

My colleague, Dr. R. Frew, published in 1911 the results of an examination for ketone bodies in the urines of 600 children admitted to hospital, and found their presence in 61·6 per cent. of all cases during the first three or four days after admission. He attributed the occurrence to change of diet, for it rapidly disappeared when the children had been longer in the hospital. I wonder myself whether nervous perturbation was a factor also.

We may for the moment look upon these two instances of acetonæmia I have mentioned, as at opposite poles. At one pole the frequent, mild, and indeterminate cases described by Dr. Frew; at the other, the fulminating cases of fatal diabetes. Between these poles we have various examples of its occurrence, including the remarkable group often called "cyclical vomiting." I have seen many striking examples of this most interesting disorder, in which acetonæmia is prominent.

A feature that has always impressed me in this group has been the extreme nervousness of these children, and quite a number of my cases have been the children of doctors. A considerable number have also been only children of very anxious parents, and in addition to a nervous temperament have been overfed with fats, eggs, cream, cod-liver oil, and such like. In fact, one finds oneself repeatedly attracted by two aspects in these cases—the irritable nervous system and deficient or overtaxed hepatic function. Some of these cases are fatal. I mean by this that a fatal and most puzzling illness may occur in which acetonæmia is prominent, and after death the explanation still remains a mystery. For example:—

A female child, aged 3 years and 3 months, was admitted to hospital in 1923, with a history during the last six months of recurrent attacks of vomiting, which had been labelled "cyclical vomiting." Six days before admission she had another attack in which she became restless and somewhat "demented." Next day she was better and then relapsed and became feverish, very restless, and wandering. On the sixth day she was admitted with staring glazed eyes, acetonæmic breath, much ketonuria, and rapidly became unconscious and died in collapse. All that was found after death was a slightly enlarged fatty liver and congestion of the cerebral meninges and brain.

In some acute infections, for example, influenza with pneumonia, acetonæmia may be prominent and associated with drowsiness and other puzzling symptoms. A condition of acetonæmia, which I have seen on more than one occasion prove fatal, may result from giving heavy doses of salicylate of soda to fragile children suffering from acute rheumatism.

In such cases there is intense general depression with a feeble pulse, and sometimes polyuria. The first serious symptom in my experience has been vomiting which is most intractable, then there supervene restlessness and the deep breathing which one associates with diabetic coma. This breathing becomes more intense, restlessness passes into delirium, and then into coma. The child eventually dies in coma.[1]

In delayed chloroform poisoning there supervene intense vomiting, the sclerotics may be slightly icteric, and the face rapidly becomes drawn with deeply sunken eyes. Restlessness and sighing respirations follow, the liver enlarges, and the child dies in coma. The urine shows abundance of ketone bodies, and the breath has the characteristic odour. Post-mortem examination and microscopy demonstrate intense destruction of the hepatic tissue.

There is still another group associated with volvulus of the small intestine, and in some of these cases the acetonæmia reaches such proportions as to dominate the diagnosis. It is a group in which starvation is a feature, and it is with such cases that my lecture is concerned. When the obstruction is high and vomiting is an urgent and early symptom acetonæmia becomes rapidly apparent, and the drowsiness, loss of strength, and extreme illness may then be attributed to a primary cyclical vomiting.

I do not think that starvation explains these symptoms, which are much more probably due to some intoxication brought about by the serious results of an obstruction high in the intestinal tract. Professor Gorter, in his recent lecture, attached much importance to the element of an acute intoxication in cases of obstruction high up in the alimentary canal. At first sight it would seem unlikely that an acute obstruction should be confused with, and lost sight of in, acetonæmia, but, as I shall demonstrate, these cases are remarkable in many respects, and we find ourselves held back by certain doubts which in the time of urgency come forcibly before our eyes.

I have already described a fatal acetonæmia in which there was little at the necropsy to account for death, and certainly no obstruction was discovered. An occurrence such as this is the cause of our grave doubts, for if in one of these cases of suspected obstruction you find no physical evidence of such obstruction you recall the fact that an acetonæmia may occur with the most urgent vomiting, and a sunken drawn face such as one sees in grave abdominal disasters and yet no striking lesion be found. Further, if the cause of this vomiting is of the mysterious nature met with in cyclical vomiting you hesitate to run the risk of an anæsthetic on the hazard of finding an obstruction which may not exist. I have known such an operation undertaken with negative results and fatal vomiting follow.

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[1] Hurtley and Trevanion, working upon diabetic coma, suggest that diacetic acid causes coma in virtue of the creolic group it contains, $\begin{matrix}\text{COH}\\ \|\\ \text{CH}\end{matrix}$, and note that sodium salicylate also contains this unsaturated linkage.

Cases and Commentary.

The first case of volvulus I met with was a girl, aged 3 years, who was admitted to hospital on Dec. 4th, 1919, for vomiting and abdominal pain. She had been previously in the hospital for a similar attack with acetonæmia, and had been grouped in the class of "cyclical vomiting."

History.—The history was a very interesting one, for since the age of 1 month she had suffered from recurrent attacks of vomiting which occurred, with abdominal pain, half an hour after food. Each attack was accompanied by constipation and the appearance of an erythematous rash. In the first year she had three attacks lasting three to four days each, and later they had occurred at intervals of six weeks to two months. Between the attacks she recovered completely and was a healthy child. Previous to this admission she had been three times in hospital with the diagnosis on the first occasion of acute appendicitis (no operation was undertaken), and twice of cyclical vomiting. This attack commenced with malaise on Nov. 30th, 1919, and on Dec. 1st she vomited three times green and offensive fluid, and refused food. This continued for three days and was accompanied by constipation and abdominal pain.

Condition on Admission.—The patient was thin and looked ill, with flushed cheeks which somewhat disguised a muddy anæmia. The breath smelt of acetone and the tongue was furred. Neither the liver nor spleen was palpable. The abdomen was not distended and there was no rigidity. Fæces were felt in the lower bowel. The urine contained large quantities of acetone and diacetic acid.

Immediately after admission the vomiting stopped and the appetite returned. On Dec. 6th, when I saw her, she had vomited once and was still constipated, but now she looked well. She sat up in bed talking and taking interest, and had passed naturally a small offensive motion. The urine still contained acetone and diacetic acid. I thought, however, she had now turned the corner and would get well. On Dec. 7th she became quiet and drowsy with sunken eyes, vomited, and refused food. In spite of treatment with salines and glucose she remained in the same condition all day with a strong acetonæmic odour of breath. On the 8th she was worse, though an enema brought away a large offensive motion. In spite of this the suspicion flashed across my mind that there must be some obstruction, and this was supported by the development of some tenderness over the right upper quadrant of the abdomen, although nothing could be felt and there was no distension. In any case, unfortunately, my suspicion had come too late for she died that evening. Throughout the illness the temperature never rose above 98·4° F. The pulse in the last 24 hours rose in rate from 96 to 164 per minute.

The *post-mortem examination* showed the greater part of the small intestine to be gangrenous and to have an unusually long mesentery, which was twisted on itself clockwise through a complete circle. The cæcum and ascending colon were unusually mobile, but the remainder of the large intestine was normal.

Reviewing this case it seems a most remarkable one, particularly when you remember that the attacks, which precisely resembled one another, had dated from the first month of life. It appears to me that some partial rotation of the intestine must have continually recurred, but only in a sufficient degree to cause a partial obstruction. Then some movement of the intestine struggling against this difficulty, and possibly the effects of intense vomiting, righted the bowel again, for between times the child became quite normal. At least that is the only solution I can imagine. I can hardly believe that this was a cyclic vomiting in which a volvulus finally supervened, for sudden abdominal pain was one of the first of the recurrent symptoms in each attack.

By a strange coincidence within a week my house physician, Dr. J. C. Spence, told me that at St. Thomas's Hospital a similar case had occurred, and a volvulus of the small intestine had been discovered after death. I have no details of this case and must content myself with recording this statement.

For the next case I am greatly indebted to my colleague, Dr. H. Thursfield.

S. S., a male aged 3½ years, was admitted to hospital on Nov. 30th, 1922, for vomiting. There was nothing unusual in his history until he reached the age of 5 months, when he had an attack of vomiting and constipation, for which he was taken to St. Bartholomew's Hospital, and this was repeated at the age of 7 months. On Nov. 26th, 1922, the child refused a meal and commenced to vomit a thick green fluid, which later became watery. He wasted rapidly and was constipated, and there was considerable abdominal pain.

Condition on Admission.—He was admitted on the 30th. His breath smelt strongly of acetone. The abdomen was not distended, was normal on palpation, and not tender. He was constipated, but two results followed from enemata. The urine contained large quantities of acetone and diacetic acid. On Dec. 2nd he retained small quantities of fluid by the mouth, but in the evening he became delirious and very restless in spite of treatment with glucose and alkalies. On the 4th there was still vomiting and the temperature rose from 99° to 107° F. The pupils were unequal, the left the larger, and the knee-jerks and abdominal reflexes were absent. Death occurred that day. The diagnosis of acetonæmia was made as the most probable explanation.

At the *post-mortem examination* the small intestines were found almost black in colour, and there was a small quantity of fluid in the peritoneal cavity. The small intestine also was very mobile, and had twisted on its mesentery from right to left one and a half times. The left side of the mesentery was very deficient. The cæcum and appendix were lying below the splenic flexure and had a complete mesentery, and were also very mobile. The hepatic flexure was fixed.

Here again we find recurrent attacks of sudden pain, complete anorexia, green vomiting, constipation, and intense acetonæmia, but in this case apparently there had been no attacks between the ages of 9 months and 3½ years. The terminal symptoms of hyperpyrexia and delirium were only misleading. In my experience the great practical difficulty of a case such as this lies in the absence of any abdominal physical signs. There was here again no rigidity, no tumour, no particular distension, and yet the small intestine was gangrenous.

The next case is imperfect and inconclusive, but has considerable value in developing the points of difficulty that surround the subject.

S. A., a female aged 3½ years, was admitted to hospital on Dec. 5th, 1923, and died the same afternoon. Since birth she had been subject to attacks of vomiting and constipation at varying intervals. Two years before admission she had a severe attack, in which there was urgent vomiting and offensive breath, and in this she was "comatose" for some hours. There was constipation, but this was relieved by high enemata which brought away a large quantity of fæces, after which the child came rapidly out of coma and with a few days in bed completely recovered. She remained well until the final illness, which commenced on Nov. 30th, 1923, with constipation and vomiting. The bowels were well open on Dec. 1st and slightly on Dec. 2nd. On the 3rd she, a much petted child, was given in addition to her ordinary diet smoked haddock and meat, and that night there commenced incessant vomiting, which was at first green and later brown. On Dec. 4th she was comatose, and next morning a small motion was passed after a glycerine enema. That day she had apparently two tetanoid convulsions which quickly passed. On the 5th the vomit smelt fæcal and she was admitted here moribund, but rallied slightly after admission. Her eyes were deeply sunken and features pinched and white. The breath smelt strongly of acetone, and the urine was loaded with acetone and diacetic acid. Fæcal vomit was noticed on the pillow. The liver was large and firm, but nothing else abnormal was discovered. There was no optic neuritis. Dr. D. Nabarro found the blood-sugar was 0·02 per cent.; the cerebro-spinal fluid normal. She died at 2 P.M. Unfortunately, a post-mortem examination was refused.

I would point out that there was no history of abdominal pain in this case, but there were mysterious attacks of vomiting and constipation, extreme acidosis with breathing of the type met with in diabetic coma, and, most important of all, fæcal vomiting. The diagnosis must remain a secret, but it is impossible not to suspect that there must have been a high obstruction, and that the exciting cause was that unwise feeding just at the moment when the attack was apparently passing off. This possibly caused excessive peristalsis and a completion of the obstruction, which may again have been a volvulus of the small intestine.

The next case occurred this year.

The child, A. R. S., was a female aged 6 years 9 months. She was admitted on Jan. 8th for a condition of extreme acetonæmia.

History.—On Jan. 5th she vomited and had acute pain, doubling her up. The vomiting had continued until admission. The bowels were constipated and she had no appetite, but on admission to the hospital there occurred a fair-sized, rather constipated action. Her previous history showed that three years before she had an attack of abdominal pain and vomiting which lasted about 24 hours. The vomit was thin and greenish. Three months ago she had also another attack of vomiting with abdominal pain which lasted about two days. In both attacks there was constipation.

Condition on Admission.—The child was collapsed with sunken eyes, the breath, at first not acetonæmic, later became strongly so, and the urine was loaded with diacetic acid. Her general condition resembled that of the first fatal case I have already detailed. Her pulse was 100, resp. 24, temp. 98° F All food was refused, and when I first saw her there was vomiting of an inoffensive, green fluid. The bowels had been open once after a rectal injection of glucose. The motion was considerable and constipated.

The *diagnosis* was most difficult. The abdomen was not distended and nothing definite could be felt. The rectum was ballooned, but there was no tenderness or resistance. The child's condition was so desperate, and the memory of fatal cases of acetonæmia without explanation at the postmortem so imprinted on my mind, that I seized on the facts that the bowels had been open and the absence of any physical signs as indications to wait at least for a time before operation, and I did this after recalling and weighing for the first time the possibilities of a volvulus of the small intestine. Uneasy in my mind, I came down to hospital next day to find that the child was worse and that some remarkable changes had occurred.

There had been several large green vomits in the night, the temperature had risen to 100°, and the pulse was now 160 per minute. The abdomen had become distinctly distended in the upper segment, and I felt a resistance which was much in the position of the tumour of a pyloric stenosis but lying deeper and rather more indefinite. This made me conclude that there was an obstruction, though I felt that now I was almost certainly too late. Mr. O. Addison was in the hospital and he at once saw the case with me, and this time we noticed peristalsis of the stomach. We felt the only hope lay in an instant operation.

Operation.—On opening the abdomen the small intestines were found blue and collapsed, and herniated through a hole in the great omentum. They had also rotated clockwise round an axis in the position I had felt the resistance. This axis was at the duodeno-jejunal junction and was apparently formed by adhesions. The entire duodenum was greatly distended. The obstruction was rapidly corrected and the child for a few hours seemed to rally and did not vomit again, but suddenly collapsed and died five hours after the conclusion of the operation. Though I diagnosed the volvulus and located the axis of rotation before operation, this diagnosis was in reality more a successful guess than a reasoned opinion, but it is, I think, worth recording. Though too late, it served to break at least for me the paralysing influence of the word acetonæmia, and makes me hope that one day I may save one of these cases.

Here, again, we have recurrent attacks of abdominal pain, green vomiting, acetonæmia intense in degree, and constipation. This has been the only case I have seen in which abdominal examination was of the slightest assistance, but then, unfortunately, not until the condition was practically hopeless.

The next case is an illustration of the difficulty of the clinical aspect of the subject.

A. D., a boy aged 7 years, was admitted to hospital in May, 1922, for an acute attack of vomiting with extreme collapse, from which he made rapid recovery. Six months later he was again admitted for a similar attack, and again recovered rapidly. I have no intimate knowledge of these illnesses, but understand that a remarkable feature was the extreme degree of collapse. On Jan. 13th, 1923, he had a third attack and was admitted into the children's ward at University College Hospital. The attack commenced very acutely at night with vomiting, diarrhœa, and abdominal pain, and when admitted he was apparently moribund. His temperature was 96° F., he was almost pulseless, with respirations 40 to the minute. The attack terminated on the morning of the 16th. Physical examination was negative except for the discovery of much diacetic acid and acetone in the urine, and a liver just felt below the costal margin. The appearance of the boy was similar to that which you see in the worst attacks of cyclic vomiting. His recovery was rapid, the temperature rising for two days to 99°. Much care was taken in the diet, and in a few days he seemed quite himself. A week later, with no change in diet or treatment and while under supervision in the hospital, at 10.30 P.M. he vomited and passed a large watery motion. Two more such motions were passed in the early hours of the morning and within four hours he was in a state of complete collapse, with his breath smelling strongly of acetone and with acetone and diacetic acid in the urine, respiration was sighing, the features sunken, and the skin cold.

Again he recovered rapidly, but on the 27th, four days later at midnight, he had another attack with epigastric pains, but in this there was no vomiting or collapse. Next morning the abdomen was distended but not greatly, and there was no tenderness. Two days later, between 11 P.M. and 1 A.M., another attack occurred with vomiting, but of slight severity. The report by Dr. A. Salmond on a barium meal was as follows: "Œsophagus normal, stomach orthotonic, completely empty in six hours. Lower pole of cæcum mobile and not tender. Irregularity of distribution in small intestines suggesting adhesions." No further attacks occurred and he left the hospital in apparently normal health.

Six weeks later, at 5 A.M. on March 13th, 1923, he was readmitted in a state of extreme collapse. Temp. 96°, pulse 150, respirations 35 per minute. The respiration was sighing; the face blue and drawn; the limbs cold and acetone in the breath, and diacetic acid and acetone in the urine. The history was identical with other attacks. Sudden vomiting and three or four watery motions had occurred in the late evening. Once again he made a steady recovery, with some fever and constipation in the first few days. The stools showed a mixed growth of streptococci and *Bacillus coli*. Repeated physical examination led to no discoveries.

He was lost sight of until Jan. 14th, 1924, when he was admitted for headache, vomiting, and abdominal pain. This attack had commenced at midnight. His condition on admission was unlike that on previous occasions, for his temperature was 100°, and his abdomen was generally though not much distended. There was no tenderness and rectal examination was negative. Recovery was rapid.

He was said to have had during November and December, 1923, ten attacks of vomiting and diarrhœa. When I saw him he was perfectly comfortable and with a normal temperature.

I must admit that this case completely puzzled me. Though much investigation was made no tangible evidence of the cause of these attacks was forthcoming. There is, however, one point which is apparent in contrast to the preceding cases. Each attack was associated with a watery diarrhœa that resembled in its intensely depressive action the diarrhœa of cholera or sprue. Another feature in this case was the regularity with which the attacks commenced about 10 P.M. and usually ended in the early morning. Biased perhaps by my experience in the cases I have related, I decided that though the boy seemed well save for slight abdominal distension upon an exploratory laparotomy. Mr. G. Williams undertook this for me on Jan. 31st by an incision through the sheath of the right rectus. Masses of enlarged glands were found, though none of large size in the mesentery. The colon was rather loose. The small intestines had a curious tessellated appearance, such as I had seen in the previous case of volvulus, but there was no twist or band. The appendix was removed but was apparently not diseased and threw no light on the condition. The boy made an uninterrupted recovery, but I am not really wiser and shall fear further attacks. It is possible in this case that some partial rotation of the intestines takes place and causes some vascular obstruction with acute œdema of their walls as the result, rather than any sensible occlusion of the gut, but this is a pure hypothesis. The enlarged glands can hardly explain such a sudden and severe condition, and the absence of any blood in the stools seems to weigh against any ulceration of the bowels or intussusception.

The next case is in some respects the converse of the preceding one.

W. C., a male aged 11¾ years. He was in hospital in May, 1919, for three weeks at the age of 10 years 4 months, with a history of recurrent severe attacks of abdominal pain which caused vomiting and prevented sleep. These attacks had been recurring every six to eight weeks for the last 18 months. There were also outbreaks of diarrhœa in some of these attacks. He was a very thin boy with a doughy abdomen, in which were felt two coils of intestine which seemed matted together, and peristalsis of the intestine was occasionally noticed. His temperature varied between 97·8° and 99·4° F. Von Pirquet's reaction was negative. The final diagnosis was abdominal tuberculosis. There was no history of acetonæmia. In October, 1920, about

12 months later, he was admitted again with abdominal pain and distension, vomiting, and constipation. Some free fluid was detected in the abdomen, but he died shortly after admission.

The *post-mortem examination* was confined to the abdomen. The intestines were gangrenous, and were twisted contra-clockwise, two complete revolutions. The small bowel was "pinched off" about four inches above the cæcum. The blood-supply to the whole of the small bowel had been cut off. The mesentery was exceptionally long and free. There was about a pint of blood-stained fluid in the peritoneal cavity, but there was no evidence of abdominal or pulmonary tuberculosis.

Here was a case in which enlarged tuberculous glands and intestinal tuberculosis were suspected and in which there was a history of attacks of pain and vomiting with some diarrhœa, but the cause of death was a volvulus and there were no enlarged glands. The only other point was the absence of any evidence as to acetonæmia. The preceding case was acetonæmic and proved to have enlarged abdominal glands, but no volvulus was present at the time of operation.

A Developmental Explanation.

I should like to refer any who are particularly interested in these cases to a recent and valuable paper by N. W. Dott[2] on Anomalies of Intestinal Rotation. It is far too extensive and elaborate for me to do it any justice here. The writer commences with the embryology, and with the development of the fore-, mid-, and hind-gut. He points out that the lower end of the fore-gut (duodenum) soon becomes fixed, as also the hind-gut, the colic angle of which is early hitched up by a retention band. The duodenum and colic angle lie close together and between them is the mid-gut undergoing rapid development, on which account it herniates through the umbilical opening of the fœtus. There are three stages in the development in which rotation may occur in this loose unfixed gut, and it is the second stage which has special bearing upon our cases. In this stage the rotation is due to disturbance in the normal sequence of return of the contents of the umbilical hernia into the fœtal abdomen. Probably the disturbance is concerned with the return of the cæcum into the fœtal abdomen, which instead of doing so last, does so first or together with the small intestine through an unusually large opening. There result various mesenteric adhesions, imperfect fixation, a mobile cæcum, or an abnormally narrow pedicle to the small intestine up to the fixed duodenum.

Dott illustrates a volvulus of the whole small intestine clock-wise as a result of malposition, and points out the importance of these abnormalities as a cause of obstruction soon after birth. Volvulus, he remarks, is the most frequent lesion on account of (1) an unduly narrow base to the loop of intestine; (2) undue length of the mesentery; (3) a point of adhesion at the convexity of the loop which acts as an axis of rotation. He mentions as exciting causes (1) unusual effort; (2) peristaltic mobility of the intestine; (3) undue distension of the stomach.

Conclusion.

My treatment of the subject is obviously imperfect and betrays the wanderer finding his way with uncertainty. The lesson it teaches is, however, clear enough, and is that we must beware of being content with the diagnosis of acetonæmia in young children when there is a history of abdominal pain and partial constipation, even though that acetonæmia be intense and physical examination of the abdomen negative. It may be wondered why I have included the case without volvulus, a case for which I can give you no satisfactory explanation; but my reasons are that the diagnosis that was made was cyclic vomiting and acetonæmia until the attack under observation in hospital seemed to exclude this suggestion, and the case itself is an example of the intense clinical difficulty that surrounds these acute attacks.

It is clear that acetonæmia is in childhood a symptom that may occur under very different conditions. Very frequently it is noticed as a fleeting event in an illness and, so far as one can judge, does not perceptibly alter the outlook, though there may be some unusual drowsiness, muscular feebleness, or cerebral symptoms. If persistently looked for, it may be recognised as an event which may have no serious clinical significance at all, as in Dr. Frew's series. In other cases, as in diabetes, it may have the greatest importance as a danger-signal. In yet others it may be the prominent feature in a recurrent illness which may, though rarely, prove fatal, and in which after death we may find no changes in the viscera, the liver possibly excluded, that can satisfy us as to the cause of death. Finally, it may prove a cause of grave errors in diagnosis, by its prominence in cases such as I have detailed here. Certainly it is not alone responsible for this error, the other factors being the absence of abdominal physical signs, the occurrence of only partial constipation, and the history of repeated attacks with complete recovery between times.

The obvious moral is, in our present state of knowledge, never to regard acetonæmia in childhood as a disease, but always as a symptom.

I must express my indebtedness to Mr. S. I. R. Chadwick, my late house physician, for great assistance in collecting the data which form the basis of this contribution.

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[2] British Journal of Surgery, October, 1923, xi., 251–286.

SOME CASES OF
ALEUKIA OR APLASTIC ANÆMIA
ASSOCIATED WITH THROMBOPENIA.

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This communication is intended to draw attention to some blood pictures presenting unusual features; the clinical conditions of which these pictures formed a part conformed in general to what in this country usually goes by the name of "aplastic" anæmia, and which has been called by Frank,[1] and after him by other continental workers, "aleukia," indicating by this an actual and relative decrease of the polymorphonuclear leucocytes. This decrease of the polymorphs gives the condition its name, but it is associated with other peculiar features, among the most striking and important of which is a decrease in the platelets; it is known from the work of Bedson[2] and others that a withdrawal of the platelets from the circulation in experimental animals is associated with purpura and hæmorrhage, and it is this deficiency of the platelets which is supposed to account for the hæmorrhagic tendency shown by cases of the aleukic type. In America, Duke[3] has produced clinical evidence in support of this view. In the opinion of Frank and his followers, the condition depends upon a primary deficiency of the hæmatopoietic system, and Frank has even laid it down that, when evidence of infection appears in the face of the blood picture of aleukia, the infection must be regarded as secondary to the damaged state of the hæmatopoietic system. Three of the cases to be described afforded evidence of infection; clinically all were characterised by a diminution, both actual and relative, of the polymorphs and by a hæmorrhagic tendency; in all in which observations were made the platelets were markedly deficient.

Case 1.—The patient, a male, aged 36, suffered from "influenza" in February, 1922; thereafter noted increasing pallor; in March experienced an attack of pain in the right knee, which persisted for a few days; from that time on similar attacks of pain occurred at intervals of two or three weeks in one or both knees, always unattended by swelling or other visible evidence of inflammation. In June the pain in the knees became so severe that the patient took to his bed. Thence onwards the pallor increased. Early in August a purpuric rash appeared on the left arm, and there was bleeding from the gums on brushing the teeth. On admission in August, 1922, the patient was very pale; petechial spots were present on various parts of the body and limbs ; the spleen was palpable and tender. The only complaint was of pain in the knees and weakness.

Patient remained in hospital until April, 1923, during which time there was little change in his general condition. The attacks of pain in the knees continued at intervals of a few weeks, being usually accompanied by an evening rise of temperature for several days in succession. Between the attacks the temperature was normal and the patient quite comfortable. Slight bleeding from the gums was persistent, and there were occasional outbreaks of petechial rash. From Dec. 16th, 1922, to Jan. 9th, 1923, the patient was treated with stabilarsan intravenously, receiving 2·2 g. intravenously in 15 doses. Otherwise treatment was by arsenicals by mouth. In April patient left the hospital at his own request; death occurred in August ; there was no autopsy.

Results of examination of the blood were as given in Table I. In many instances examination of the blood films revealed some degree of anisocytosis and poikilocytosis ; a slight degree of polychromatophilia was also present ; nucleated red cells were present to the extent that 2 to 3 were usually encountered in counting 100 white cells. In spite of these findings, and in accordance with the observation that the colour-index never rose above unity, pernicious anæmia was ruled out in the diagnosis by the fact that examination of the gastric contents after a test-meal showed free HCl to the extent of 0·073 per cent. and combined to the extent of 0·033 per cent.

A most striking feature of the blood picture in this case was the " aleukia "—the great diminution, both relative and absolute, of the polymorphonuclear neutrophiles. The intermittent temperature and enlarged spleen both suggested an infective process—though both are reported by Frank in his cases of aleukia.

In the next case an infective process certainly played a part, though how far as a cause and how far as a result of the aleukia is open to discussion.

CASE 2.—Female aged 50, married, five children; rheumatic fever at age of 30. In December, 1922, the patient had a severe attack of pain in the left loin. In April she experienced a second attack of a like nature, lasting for some days. From that time on until her admission on Sept. 1st, 1923, the attacks recurred at intervals of a few weeks, and she became steadily worse and more run down.

Condition on Admission.—The patient was pale, and complained principally of a rather ill-defined pain in the back, which was tender to touch. Tenderness was elicited on deep pressure in the abdomen, but palpation revealed nothing abnormal. Shortly after admission the site of the pains moved to the upper arms and thighs. At first it was impossible to identify the nature of the pains, but as the condition advanced, it became obvious that they were located in the bones. In spite of the exhibition of iron and arsenic, the pallor steadily increased and the patient became increasingly asthenic. On pricking the ear for the blood examinations detailed below, bleeding continued for some 15 minutes to half an hour, a very marked prolongation of the bleeding time. In October the spleen became palpable and thereafter steadily enlarged ; at this time also hæmorrhage, never severe, but almost continuous, started from the nose and continued until death. On the 15th, venipuncture was performed for the purpose of cultivating the blood ; on applying a rubber band around the arm just above the elbow for the purpose of producing venous engorgement a large and striking crop of purpuric spots appeared in the antecubital fossa distal to the constricting band ; this was the only purpuric manifestation. The blood culture itself was negative.

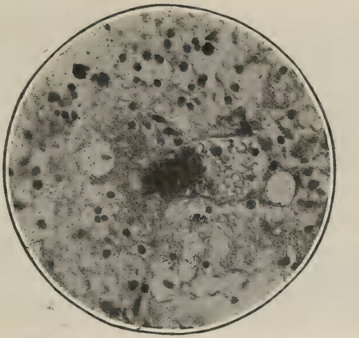
During the whole of her stay in hospital the patient ran an irregular intermittent temperature ; at first it never rose above 101° F. and there were long apyrexial periods ; during the last two weeks of life, however, it became continuous, rising as high as 104° in the evenings.

The result of blood examinations was as shown in Table II.

Autopsy.—At autopsy, save for considerable fatty change, all the organs except the spleen, which was enlarged, and the bone marrow, appeared normal. It had been anticipated that the bone marrow throughout the body would be of the greyish colour and dry consistency usually met with in the aplastic anæmias, and this was the case so far as that of the ribs, sternum, diploë, and right ulna were concerned. The only other bone of which the marrow was examined was the left femur ; the shaft of this bone contained a deep red, jelly-like tissue, very different from the contents of the medullary cavities of the other bones examined, and also very different from the opaque, maroon-coloured marrow usually found in the same site in pernicious anæmia.

On microscopic examination it was obvious that the peculiar appearance in the marrow of the femur was due to hæmorrhage within the medullary cavity. Sections showed no hæmatopoietic tissue, but masses of red cells in process of disintegration, together with much formation of fibrin. The picture was that of a fairly recent hæmorrhage, in which the hæmoglobin was in process of being dissolved out of the red cells, but in which definite organisation had not yet commenced. Further examination showed clumps of streptococci lying in the hæmorrhagic areas, for the most part in what was left of the sinuses of the marrow (Fig. 1).

FIG. 1.



Case 2.—Streptococci in marrow of femur.

Microscopic examination of the spleen showed very similar appearances—masses of effete red cells, fibrin formation, and the presence of clumps of streptococci. Streptococci were also demonstrated in the sinuses of the liver, though here they were unaccompanied by extravasation of blood, and were presumably due to terminal spread by the blood-stream.

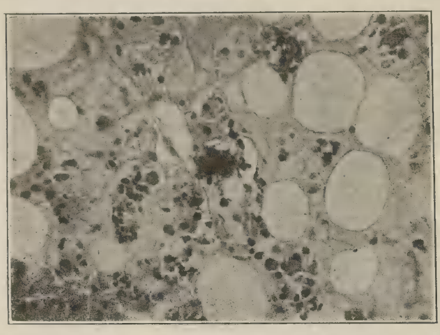
Taken in conjunction with the fact that severe gnawing pains had existed in the shafts of the long bones for weeks before death, these post-mortem findings are of considerable interest. The presence of the hæmorrhages would seem to offer an explanation of the pains and the presence of the streptococci an explanation of the hæmorrhages. The presence of hæmorrhages and of streptococci in the spleen offers an explanation of the enlargement of this organ, and the fact that this enlargement made itself apparent some weeks after the onset of the bone pains suggests that the invasion of the spleen was secondary to that of the bone marrow. It seems probable that, could an examination of the lumbar vertebræ have been made post mortem, an explanation of the early lumbar pain might have been forthcoming along the same lines. The fact that quite late in the condition culture of the blood was negative, together with the fact that post mortem the heart valves were found to be unaffected, indicates that, except as a terminal event, at no time was the passage of organisms into the blood-stream very free.

CASE 3.—Male aged 19. No past history of importance. Onset on May 27th with headache, sore throat, and swollen glands ; two days later bleeding commenced from the throat. On June 2nd patient was removed to a fever hospital ; while there the bleeding continued from the throat and also occurred from all other mucous surfaces. The tonsils were ulcerated, but no glands were now palpable. A petechial rash appeared on the mucous membrane of the mouth and on the skin of the arms and trunk. The temperature ran as high as 103° F. On June 8th patient was admitted to St. Thomas's Hospital ; on the same day he received a transfusion of 900 c.cm. of citrated blood.

Blood count : Hb below 20 per cent. ; red cells, 1,400,000 ; white cells, 200. White cells nearly all lymphocytes ; platelets very scanty. Death occurred on June 11th.

Autopsy.—Body showed purpuric spots on arms, chest, and abdomen ; in the abdominal cavity the mesentery showed purpuric patches, and there was a large hæmorrhage around the lower pole of the right kidney ; the spleen was large, firm, and very dark ; the liver was large, soft in consistency, and in colour dark red mottled with yellow ; the yellow mottling was due to necrotic patches throughout the organ. The heart muscle was soft, the valves were normal. The bone marrow of the femur was dark red and semi-liquid. Microscopic examination of the liver showed the yellow patches to be areas of focal necrosis; numerous coliform organisms were present in the sinuses throughout the organs; similar coliform organisms were demonstrated in section of the spleen and the marrow from the femur (Fig. 2), and in both these situations abundant hæmorrhages were evident.

FIG. 2.



Case 3.—Coliform organisms in marrow of femur.

CASE 4.—Male aged 34. Originally a typical case of myeloid leukæmia; swelling of the spleen was first noticed in July, 1923; patient was admitted to hospital during the same month, his blood then showing a white count of 121,000 per c.mm. He received a number of applications of radium to the spleen. In October he commenced to run an irregular pyrexia, which continued until death. His white counts were as follows: Oct. 22nd, 28,000 per c.mm.; Nov. 6th, 34,000; 24th, 5700; Dec. 13th, 2800. At this time a petechial rash appeared on the back and hæmorrhage occurred from the mucous membrane of the nose and throat. Death occurred on Dec. 16th.

Autopsy.—This case showed a miliary tuberculosis. The only unusual feature was the fact that in the only bone examined, the femur, the marrow showed extensive involvement in the tubercular process. A section of the bone marrow is shown in Fig. 3.

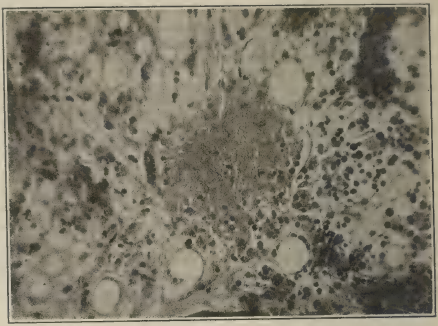
TABLE I. *Blood Examinations.* (Case 1.)

Date.	Red cells per c.mm.	Hb.	Colour index.	White cells per c.mm.	Polymorphonuclear.						Lymphocytes.		"Large hyalines."		Platelets per c.mm.
					Neutrophiles.		Eosinophiles.		Basophiles.						
					Per cent.	Per c.mm.	Per cent.	Per c.mm.	Per cent.	Per c.mm.	Per cent.	Per c.mm.	Per cent.	Per c.mm.	
12/8/22	1,500,000	25	0·8	7300	7	511	Nil.	Nil.	2	146	90	6570	1	73	—
26/12/22	1,600,000	—	—	8800	1	88	,,	,,	Nil.	Nil.	98	8624	1	88	—
5/1/22	1,300,000	25	0·97	7000	6	420	,,	,,	,,	,,	87	6090	7	490	—
5/2/23	2,000,000	25	0·6	6000	12	720	0·5	30	,,	,,	85·5	5130	1	60	80,000
21/2/23	1,900,000	—	—	5700	8	466	Nil.	Nil.	,,	,,	87	4959	5	285	—
1/3/23	1,200,000	—	—	4000	13	520	,,	,,	,,	,,	87	3480	Nil.	Nil.	60,000
30/4/23	1,025,000	20	1	4000	5	200	,,	,,	3	120	92	3680	,,	,,	—
5/7/23	1,330,000	22	0·88	2200	25	550	,,	,,	Nil.	Nil.	75	2650	,,	,,	—
TABLE II. (Case 2.)															
19/9/23	3,040,000	45	0·75	8700	—	—	—	—	—	—	—	—	—	—	—
12/10/23	1,940,000	20	0·5	4680	7	328	Nil.	Nil.	1	46	91	4259	1	47	20,000
18/10/23	1,450,000	21	0·7	900	10	90	,,	,,	Nil.	Nil.	90	810	Nil.	Nil.	Almost totally absent.
TABLE III. (Case 5.)															
4/5/23	3,600,000	75	1	1600	50	800	Nil.	Nil.	Nil.	Nil.	46	736	4	64	Scanty.
13/6/23	5,200,000	65	0·65	3750	—	—	—	—	—	—	—	—	—	—	,,
20/6/23	5,500,000	73	0·66	3000	—	—	—	—	—	—	—	—	—	—	32,000
10/12/23*	4,080,000	73	0·9	2200	34	748	Nil.	Nil.	2	44	59	1298	5	110	64,000
2/3/24*	5,180,000	70	0·7	4000	44	1760	,,	,,	Nil.	Nil.	49	1960	7	280	50,000

— Indicates no observation recorded. * After discharge from hospital.

Here are, then, four cases the principal features common to all of which are anæmia, a hæmorrhagic tendency, and leucopenia, associated in those cases in which observations on the point were made with a relative and actual diminution of the polymorphs and a disappearance of the platelets. In three of these cases it was possible to demonstrate an infection of the bone marrow after death—in one case streptococcal, in one due to a coliform bacillus, and in the last tubercular. There are good grounds for believing that such a septic condition of the bone marrow would also have been found in Case 1 had examination been made. On the face of it, it would appear reasonable to attribute the blood picture and the clinical condition to the infection of the bone marrow. Some doubt is thrown upon this interpretation by the next case to be described.

FIG. 3.



Case 4.—Tubercle in marrow of femur.

CASE 5.—Female aged 53. Always had tendency to bruise rather easily; menstruation usually excessive until cessation. In January, 1923, one of her eyes became "black" without any known previous trauma, at the same time petechial spots appeared on the gums and lips. In April, 1923, a tooth was extracted; the bleeding continued for five hours, until the socket was plugged and oozing continued for some time after this. Thereafter she became very pale. Since January she had bruised even more easily than usual, and had had several outbreaks of purpuric spots on the feet and legs. On admission in May, 1923, the patient showed numerous bruises all over the body and limbs, ecchymoses were present on the gums and purpuric patches on the feet and legs. The spleen was not then palpable. Blood counts in this case were as shown in Table III.

Notes on Blood Counts in Table III.—May 20th, 1923: Some anisocytosis and poikilocytosis of red cells, but no nucleated forms seen. Notable diminution of the platelets; many "giant" forms present. June 13th: Platelets very deficient. 20th: Some anisocytosis and poikilocytosis, but not so marked as previously. Platelets still very scanty; "giant" forms still present, but not so numerous as in previous observation. Dec. 10th: Anisocytosis and poikilocytosis still present.

On all occasions on which blood was taken for examination the hæmorrhage following the necessary prick was very prolonged, indicating a greatly increased bleeding time. While in hospital this patient developed a crop of petechiæ all down the left side, on which she was accustomed to lie while in bed. Otherwise the course was uneventful, and, as will be seen from the blood counts given above, her condition steadily improved. There was no overt hæmorrhage at any time, but occult blood was present in the stools. Examination of the stomach contents after a test-meal showed free HCl 0·09 per cent., and combined 0·01 per cent. The patient was discharged in July and seen again in December, 1923, and March, 1924. On the last examination she complained of pain in the left side, and on examination the spleen was found to be enlarged and palpable. She stated that she still bruised readily, but otherwise appeared to be in fair health.

In this case the condition of aleukia, so far as the observations go, seems to be inherent, though subject to fluctuation. The blood picture shows the same features, though to a less marked degree, as in Cases 1–4, and would seem to indicate an inactive condition of the hæmatopoietic system. It is not difficult to believe that such a hæmatopoietic system would offer but little resistance to infection and that in the face of an infective agent, no matter of what nature, the patient might readily pass into the condition illustrated by Cases 1–4. Case 4, indeed, affords an instance of a damaged hæmatopoietic system being attacked by an infection—the noxa being supplied in the first instance by the leukæmic condition, and in the second by the radium treatment—while the infective agent in this instance was the tubercle bacillus. I have seen one other case, of which, unfortunately, I have no notes, identical in every way, except that the patient was a woman, and X rays were used in treatment instead of radium. In this case I was able to demonstrate a streptococcus in the bone marrow.

These last two cases, in which the infection of the bone marrow is known to have occurred in the presence of pre-existing damage, seem to afford some evidence for the belief that in all the cases described the bone marrow may have been in an unhealthy condition prior to its infection. The fact that in Case 1, in such bones as were examined and the marrow of which was not the seat of an infective process, the marrow was of the dry, colourless appearance usually associated with anæmia of the aplastic type, also appears to afford some evidence that in this case at any rate the myelophthisic condition was primary to the infection.

Myelophthisic Condition giving Rise to Blood Picture of Aleukia.

Of the myelophthisic condition giving rise to the blood picture of aleukia, Frank recognises three degrees.

1. *Intermittent Thrombopenia.*—This condition manifests itself clinically by occasional recurrent attacks of hæmorrhage and purpura; it is seen mainly in children, and embraces those conditions now variously known as purpura hæmorrhagica, peliosis rheumatica, Henoch's purpura, and so forth; it may also occur in adults. Frank states—and his view is confirmed by such other writers as have given attention to the matter—that, prior to the onset of the hæmorrhagic manifestations in these cases there is always a diminution in the platelet count, though between attacks this is normal, and some degree of leucopenia with an actual and relative decrease of the polymorphonuclear neutrophiles. The present writer has only had the opportunity of investigating one case of this kind: in it the platelets were reduced to 50,000 per c.mm.

2. *Essential Thrombopenia.*—The condition just described is characterised by its intermittency and by a tendency to disappear. In some persons, on the other hand, it may last for long periods or throughout life. Such persons bruise readily and may at times have attacks of purpura or hæmorrhage of greater or less severity. The blood picture shows anæmia, a reduction in the platelet count, leucopenia of varying degree, and a diminution in the polymorphonuclear neutrophiles, both relative and absolute. Case 5 above would fall under this head.

3. *Aleukia Hæmorrhagica, or Aplastic Anæmia.*—An accentuation of the features described above will show itself clinically by severe anæmia, purpura, and hæmorrhage. Except for the accentuation of all the features the blood picture will be the same as described already. In the most severe cases the hæmorrhage may be intense and the downward progress rapid. Cases 1, 2, and 3 above would fall under this head, with the infection as a superadded phenomenon.

It will be seen from the above that Frank has attempted to bring together within one concept a number of clinical conditions not now regarded as necessarily related. He does admit that typical aplastic anæmia may arise as the result of the activity of certain poisons, citing in this connexion the experimental work of Bunting[4] with benzol, and also the effect of X rays; Case 4 above would be one of these cases due to a specific noxa. Leaving these cases aside, however, he maintains the existence of aleukia as an entity (wohlumschriebene Krankheit).

The counts of the platelets given above were made by counting the platelets against the red cells in 2 per cent. sodium citrate in normal saline solution. A drop of this solution was placed upon the nail bed of the patient's finger and puncture made through the drop, the drop of blood and solution being then received into a 1 c.cm. bulk of the solution in a paraffined agglutination tube. The actual count was then made at leisure in the laboratory. This method can only be regarded as approximate. With normal persons the count usually comes out at 250,000 to 350,000. A count of below 100,000 is looked upon as indicating a definite thrombopenia.

My thanks are due to Prof. H. MacLean, Director of the Medical Unit, St. Thomas's Hospital, and Dr. C. R. Box, of St. Thomas's Hospital, for permission to publish cases; to Dr. Coulter, of the Police Convalescent Home, Hove, for notes on the progress of Case 2 after the patient had left hospital; and to the Medical Research Council.

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THE INDICATIONS FOR OPERATIVE TREATMENT IN CASES OF PULMONARY TUBERCULOSIS.*

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A REAL interest in the surgical treatment of pulmonary tuberculosis is at last stirring in this country, roused by the visits of foreign surgeons with big experience. Though I have been doing the various thoracic operations for the last 12 years and more, it has only been possible during the last two years or so to get the work properly organised. Since then, however, the work has proved so stimulating, and the results so encouraging to those who have watched the cases, that a greater general desire for knowledge on this subject has developed in the Association. For this reason I have been asked to define the type of case fit for surgical intervention. Under the terms "surgical treatment" and "surgical intervention" I am including artificial pneumothorax; but this does not mean that I consider pneumothorax should be done by the surgeon. "Surgical treatment" is utilised as a convenient term for referring to certain forms of special treatment as opposed to treatment by graduated exercises and the use of vaccines.

It is tempting, in passing, to speculate on the changes that will have to come about in sanatoria built for treatment by graduated exercises. A time will come when the public will expect that the surgical methods which are proving so triumphant shall be available for rich and poor alike. It will mean the addition of operating facilities as well as X rays, an increase in nursing accommodation and of nursing and medical staff. In the majority of institutions the staff is inadequate in numbers, even for pneumothorax treatment, on anything like the scale on which it should be used; it is wholly inadequate if surgical treatment is made available for all those cases for whom it is suitable.

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* Delivered before the Welsh National Memorial Association at Llandrindod Wells.

Cases under Personal Observation.

In my own sanatorium, out of 30 patients seven are having pneumothorax treatment. Of these, one is having a bilateral pneumothorax; the right side was started three years ago and adhesions had to be divided to obtain complete collapse. The left side was started two years ago. One is an advanced unilateral case who has been under treatment at various places since 1919; pneumothorax had not previously been suggested. It is nine months since I started; his cough and sputum are reduced to a negligible amount and the rectal temperature, which was averaging 101° F. at nights, is now not higher than 99°. A third case is a young woman who came in with considerable bilateral disease. Her evening temperature during the first three months varied between 100° and 102°. Absolute rest had no effect on her temperature and she lost weight, but the signs on the least affected (right) side subsided sufficiently to allow me at last, and in desperation, to start a pneumothorax on the left side last June. By the middle of July her temperature had started to drop. Although her pneumothorax is most incomplete, her evening temperature (rectal) has, during the last eight months, averaged 99°. She can now walk three miles and has gained 24 pounds in weight. A fourth case was admitted with a pyopneumothorax following on artificial pneumothorax. The liquid has been repeatedly replaced by oxygen but re-accumulates. I propose doing a thoracoplasty on him.

I am going to attempt a pneumothorax on three others; on one of these, if it fails, a thoracoplasty will have to be done. On three of the patients here at present a pneumothorax was tried and failed. On one of these I did a thoracoplasty, after trying ordinary treatment for eight months without success. She, from the day of the operation (eight months ago), has had neither cough nor sputum, although she had had both persistently for two years prior to it.

Aim and Method of Production of Collapse.

The aim and object of all varieties of surgical intervention in suitable cases is to obtain collapse of the lung in order to (1) rest the lung—as one does a tuberculous joint; (2) obliterate cavities and produce approximation of their walls—as one does with all infected cavities, when possible; (3) compress the lung and so prevent bleeding; to this may be added (4) put the lung out of action to abolish dyspnœa. It is generally understood that with the rest, obliteration of cavities and compression obtained by collapse, the symptoms, cough, expectoration, and bleeding, together with those symptoms due to the secondary infections, are diminished or abolished according to the extent of the collapse of the lung and the limitation of the disease to the one side. But it is not so generally realised that dyspnœa is a symptom dependent far less on the extent of the loss of functioning lung substance than on the interference with the relative freedom of expansion of the lung and the chest wall. Dyspnœa may be more marked in a comparative early case of unilateral fibrosis which is hindering expansion of the lung while the corresponding side of the chest wall is moving freely, than it is in a more advanced and bilateral case in which the movements of the chest wall have become restricted and are therefore, at each respiration, attempting to produce much less expansion of the lungs.

Collapse may be produced (*a*) of the whole lung, by pneumothorax, in the absence of adhesions; or, if adhesions are present, by thoracoplasty—i.e., partial decostalisation resulting in collapse of the lung and chest wall; and (*b*) of part of the lung, by pneumothorax, when adhesions are preventing total collapse; or by apicolysis—i.e., collapse of the upper lobe together with the parietal pleura, the space thus formed being filled in by some foreign body.

A local partial collapse of the base can also be obtained by phrenicotomy and consequent paralysis of one dome of the diaphragm; localised partial collapse results also from a localised thoracoplasty. So much simpler and less severe is pneumothorax than thoracoplasty, or even than apicolysis, that this method must always be the method of choice when practicable. With a total pneumothorax and the absence of adhesions, over 70 per cent. of the cases so treated become fit to return to work. The presence of adhesions, however, reduces this favourable result to as low as 11·1 per cent. when the adhesions are extensive. Adhesions can be divided, however, and whenever a partial pneumothorax can be converted into a total one by the division of adhesions, this must always be done.

A Classification of Tuberculosis from a Surgical Standpoint.

Having thus sketched in briefly what is the aim and object of surgical treatment, and the means by which that object can be obtained, I am in a position to indicate the types of case suitable for this treatment. To make this easier I am going to classify tuberculosis in a manner which physicians doubtless will consider most unorthodox.

A. *Acute Tuberculosis:* (1) Miliary, (2) pneumonic.

B. *Chronic Tuberculosis:* (1) *Early Stage.*—During this stage the fibrosis is nominal and the retraction of the lung due to it is easily compensated by collapse of the chest wall, displacement of the mediastinum, and emphysema of the healthy parts of the lungs. In this early stage secondary infection, though probably present to a slight degree, produces no recognisable distinctive symptoms.

(2) *Fibrotic Stage.*—The amount of fibrosis and the contraction of the volume of the lung due to it has passed beyond the limits of compensation. The pathological mechanical factors are appearing on the scene; the bronchi are becoming in places constricted, in others dilated; retention of secretions is beginning. Secondary infection is established, but is not yet of supreme importance. The symptoms are in part due to the secondary infection, but the tuberculous infection and the symptoms due to it (together with the dyspnœa due to the fibrosis) are still predominant. This stage is a transition stage between 1 and 3, but it undoubtedly deserves a class to itself, although the transition from stage 1 to 2 and stage 2 to 3 are unrecognisable. In cases with a moderately good resistance to the disease this stage may be very protracted.

(3) *Bronchiectasis and Cavity Formation Stage.*—The pathological mechanical factors are pronounced; dilatation and distortion of the bronchi and bronchioles or the presence of single or multiple cavities in the lung parenchyma are associated with a degree of retention of secretions and of secondary infection that alters the clinical picture in a very decided fashion. This is particularly the case when the secondary bronchiectasis is established; the clinical picture of tuberculosis may be completely obscured by that of bronchiectasis. The condition of the patient is serious: failure of nutrition and a high, swinging temperature are added to the picture.

Such, then, is my classification of pulmonary tuberculosis from the surgeon's standpoint. To it must be added that hæmorrhage may occur in any stage of the chronic variety. In the first stage it is never serious; in the second stage it may be alarming owing to its persistency, or distressing because of the frequency of the recurrence of the bleeding; in the last stage it may be immediately fatal.

Indications for Surgical Intervention.

I am now able to describe in what types of cases surgical intervention is indicated. I have already stated that of the three methods, artificial pneumothorax, apicolysis, and thoracoplasty, neither of the two latter should, as a general rule, be used when a complete pneumothorax is possible; and that if a pneumothorax is incomplete owing to adhesions, these adhesions should be divided if they are of that kind which lend themselves to it—i.e., are in the form of bands.

The acute miliary form of tuberculosis is practically always bilateral and is unsuitable for surgical treatment. The pneumonic form, on the other hand, is often unilateral. If it is entirely unilateral, then, unquestionably, pneumothorax offers the greatest hope of success. In this type, even if no adhesions are present, it will take a long time to collapse the lung because it is consolidated, and absorption of the pathological products takes a long time. Should adhesions prevent the production of a pneumothorax, thoracoplasty is not indicated, as the condition of the patient is too grave to stand such a serious operation. If, however, the pneumothorax is limited at the base by adhesions between the lung and the diaphragm, the phrenic nerve can be divided in the neck under local anæsthesia so as to paralyse that dome of the diaphragm and assist in the collapse of the base.

Chronic Pulmonary Tuberculosis: Stage 1.—I have said as regards this stage that it is one in which the fibrosis is so little that it can be compensated by the body itself, and, as there are neither cavities nor abnormally dilated spaces, the disease can heal completely if the resistance of the patient is moderately good and can be sufficiently improved. Surgical intervention is not, therefore, a *necessity;* on the other hand, the greater my experience the more emphatic do I become in my assertion made first some years ago now, that no case of pulmonary tuberculosis which has been diagnosed with certainty is too early a one for treatment by artificial pneumothorax, provided there are no contra-indications. I have never regretted doing an artificial pneumothorax in an early case, but I have often regretted not doing one. Let me at once add, however, that if artificial pneumothorax fails, no more severe line of treatment is justifiable.

My reason for this axiomatic statement is, that it is very difficult to gauge the resistance of a patient. I have frequently been deceived by the mildness of the disease, by the general good appearance of the patient, or by the rapidity with which the signs clear up under ideal conditions, into thinking that healing will progress rapidly and is likely to be maintained, only to find disappointment in the slowness or absence of recovery of control or the ease with which the disease reasserts itself at the first relaxation of routine treatment.

In the selection of cases at this stage for artificial pneumothorax there are certain considerations in addition to the ordinary contra-indications which have to be weighed very fully. In the more advanced cases in which pneumothorax treatment may be the determining factor as to whether the patient lives or dies, the future problem of time and expense for the refills over a period of two, three, or more years is of less serious import. But in these "early" cases the patient expects—and rightly so—to be able to return to work. If he is in a subordinate position—e.g., in an office or in the army—the leave required for these refills might seriously prejudice his position. It requires, moreover, much greater confidence on the part of the medical man to advise, and of confidence of the patient in his medical adviser to accept the recommendation of artificial pneumothorax at this period in the course of the disease.

As we shall see when we come to the contra-indications, the temperament of the individual may be an important factor in deciding against pneumothorax treatment. In these early stage cases still greater weight must be attached to the inadvisability of active treatment in a patient whose temperament is not absolutely satisfactory.

In stages 2 and 3 surgical intervention is always indicated when practicable. In stage 2, particularly when it is not far advanced, it is possible to get good results by sanatorium treatment, and the patient may, if fortunate, continue to keep well. It must be remembered, however, that the lung is not only scarred, but that also the fibrous tissue is under unfavourable conditions because it is always under tension, the fibrosis having increased beyond the stage of adequate compensation. Moreover, changes have already begun in the bronchi and bronchioles, and these have become much more susceptible to infection and reinfection. Once the patient has reached stage 3 nothing but a very partial and very temporary improvement—if that—can be effected by sanatorium treatment or by tuberculin or by any line of treatment which does not result in collapse of the lung and its dilated spaces. It must be remembered, moreover, that once stage 2 is definitely established it is probably rarely possible to keep the patient constantly free from infection, which means that he is constantly more or less a danger to other members of the community. Until stage 2 is reached, artificial pneumothorax with, if necessary division of adhesions, and perhaps phrenicotomy, is the only justifiable method of surgical intervention. But with the advent of stage 2 apicolysis and thoracoplasty have to be considered as alternatives when artificial pneumothorax is impracticable. If the disease has reached stage 3, thoracoplasty is the only alternative to a complete pneumothorax. The choice between apicolysis and thoracoplasty rests entirely on the extent of the disease. Apicolysis should be confined to those cases only in which the disease is limited to the upper lobe. It is eminently suitable to that form of chronic disease in which one sees radiologically the upper lobe extensively fibrosed and sharply delineated from the middle or lower lobe.

Hæmorrhage may occur in any stage of the disease, and is always an indication for artificial pneumothorax unless there are contra-indications. The peace of mind obtained for the patient when he or she can be assured that bleeding is no longer to be feared is, in itself, sufficient to justify the treatment.

Contra-Indications.—The contra-indications to pneumothorax and thoracoplasty are much the same, except that for the major operation they are somewhat more stringent and more rigid. It is easily understandable that albuminuria, glycosuria, and intestinal tuberculosis are such unfavourable complications that to embark on surgical treatment when any of these are present would be most unwise. Laryngeal tuberculosis, on the other hand, is not a contra-indication unless very advanced and associated with extensive ulceration or involvement of the epiglottis. Advanced intestinal stasis and nervous or neurasthenic temperaments are likely to interfere with the success of surgical treatment. The danger with stasis is in the violence of the reactions it may give rise to after refills with gas, and the greater likelihood of pleural effusions. Myocarditis and a rapid pulse due to constant toxic absorption are not contra-indications, but a failing heart is. All these things have to be ascertained before we can decide as to whether the opposite lung is sufficiently clear, or not too extensively involved by active tuberculosis or fibrosis to justify pneumothorax or thoracoplasty on the more extensively affected side.

We have to consider extensiveness of the disease (1) as it affects pneumothorax; (2) as it affects thoracoplasty.

(1) *Extensiveness of the Disease on the Opposite Side when Complete Collapse of the One Lung by Pneumothorax is Contemplated.*—Certain general principles only can be given, as it is extremely difficult to define in words the exact maximum amount of disease in the opposite lung which can be allowed; this is influenced by the whole general summary of the case one forms in one's own mind. Activity in the opposite lung is not a bar, but it must not be acute. Fibrosis may be present, but it must be localised. Scattered foci of infection throughout the lobes, the presence of

a cavity or of definite bronchiectatic changes are contra-indications. There must be at least two-thirds of healthy lung tissue. Reference must be made here to bilateral pneumothorax. In these cases not more than two-fifths of either lung is collapsed. The danger in these cases is heart failure. Bilateral pneumothorax is sometimes undertaken for bilateral disease, the collapse on the second side being started soon after that on the first. I am not much in favour of this, but I have undertaken partial bilateral collapse, beginning the treatment on the second side some six months after the first. In none of these cases was the bilateral pneumothorax conceived at the onset. Rather the second side has been started because treatment of the original side had not succeeded in arresting the progress of the disease in the other, but had been successful in arresting the disease in the collapsed lung.

(2) *Extensiveness of the Disease in the Opposite Lung as it affects Thoracoplasty.*—As a general rule it may be said that a much higher standard of soundness must be considered as essential. Some continental surgeons do thoracoplasty even when there are signs of activity in the opposite lung. Personally, I prefer that the lung which is called on suddenly to take on all the functions of respiration and oxygenation of the blood shall be free from signs of activity at the time of the operation.

I would urge that it is impossible to diagnose suitability on clinical evidence alone. The decision should be arrived at only after consideration of the general condition, the clinical and radiographical evidence of the extent and acuteness of the disease, a knowledge of the state and functioning capacity of the cardio-vascular system, of the degree of intestinal stasis, and of the state and functioning of all the other organs in the body, and of the mental temperament.

Finally, I would remind you of the brilliance of the results of surgical treatment. Of the cases in which a complete pneumothorax has been obtained without there being any adhesions, over 70 per cent. become fit to return to work; this high percentage is reduced to between 11 and 12 when adhesions interfere seriously or completely with the production of the pneumothorax. Of the patients on whom a thoracoplasty has been done, from 50 to 60 per cent. are "relatively cured," are free of symptoms, or much improved. The mortality of this operation is just over 8 per cent. (Gravesen, 8·6 per cent.; Jacobæus and Hey, 8 per cent.; Morriston Davies, 8·3 per cent.). The resulting deformity is surprisingly slight and is easily concealed by ordinary dress.

THE SPORE-FORMING BACTERIUM ON RICE-GRAINS

USED BY FAMILIES SUFFERING FROM BERI-BERI AND EPIDEMIC DROPSY.

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SAMPLES of rice-grains used by families suffering from beri-beri and epidemic dropsy in different localities—viz., Howrah and Prome in Burmah—were kindly supplied to me by Major H. W. Acton, professor of pathology, Calcutta School of Tropical Medicine, for purposes of microtome section and appropriate staining.

Isolation of Bacterium.

During the investigation it was found that a spore-forming bacterium readily grew in cultures of "diseased" grains of rice (i.e., such grains as show a white streak inside when put in contact with water for two or three minutes) in agar medium, when the outer surface of the grain was sterilised by dipping in 95 per cent. alcohol for two or three minutes and washing in sterile distilled water for five to eight minutes, or by keeping in pure carbolic acid for five minutes, transferring to rectified spirit for 10–15 minutes until all traces of carbolic acid were removed, and finally, washing in sterile distilled-water tubes plugged with cotton-wool for 10–15 minutes; in both the methods followed the grains were carefully broken up with the help of a sterilised scalpel, and the broken pieces introduced into the agar media. Under similar conditions the same spore-forming bacterium was found in cultures from those grains of rice which did not show the white streak when put in contact with water. Subsequently it was found that the same bacterium ultimately grew on common market rice of Calcutta in agar media. This naturally aroused suspicion, and the slides containing the bacteria in question were sent to Mr. C. M. Hutchinson, Imperial Bacteriologist, Pusa Research Institute, for determination. He thought they were probably the spore-bearing forms of *B. subtilis*, a very common contaminating bacterium growing on the outer surfaces of fruits and seeds due to imperfect sterilisation.

Sterilisation.

They were proved to be so by adopting the following better method of sterilisation: The grains were dipped in 1/1000 corrosive sublimate and 95 per cent. alcohol for about three to four minutes, kept for two hours in sterile test-tubes of distilled water, poured out into a sterilised glass plate, and introduced into the agar media by means of sterilised forceps, some broken and others unbroken. The cultures were repeated on five successive days at the rate of four cultures a day. No growth was noticed in any tube. Subsequently, 95 per cent. alcohol was omitted altogether, and the rice-grains were dipped simply in 1/1000 corrosive sublimate for about three to four minutes; the subsequent steps were the same, and no tubes became infected though they were kept for weeks together. In case of broth cultures it was found that dipping of rice-grains in 1/1000 corrosive sublimate for six minutes was necessary to maintain the sterility of cultures. Anaerobic cultures were also tried in broth-paraffin media, and they also remained perfectly sterile.

Rice-grains from the stores of diseased families, and grains of common healthy rice, were boiled in water for an hour and a half and then put in agar tubes; in two days they gave rise to abundant growth of the same spore-forming bacterium, probably *B. subtilis*. If the grains were immersed in 1/1000 corrosive sublimate for four minutes before boiling in water for the same period, and agar tubes were inoculated with the grains, no growth was found in any tube. This showed that the spores are not destroyed by the ordinary method of cooking rice, and are ordinarily taken with rice diet without any harm.

The penetrating power of 1/1000 corrosive sublimate (watery as well as alcoholic) into the rice-grains was tested; it was found to have no penetrating power, and to be unable to enter into the rice-grains in any way. A control was kept of grains not dipped in corrosive sublimate, and the internal parts of the grains looked just the same in both the cases.

Germination Test of Gram Seeds Dipped in Corrosive Sublimate.

To show that dipping of gram seeds in 1/1000 watery corrosive sublimate has no deleterious effect on the living cells of the embryo within (1) dry gram seeds, (2) dry gram seeds soaked in water for about half an hour, and (3) water-soaked swollen gram seeds after being peeled off their skin, were dipped in 1/1000 corrosive sublimate for four minutes, separately washed thoroughly in water for more than an hour, and separately planted in earthen tubs, Nos. 1, 2, and 3. Germination into seedlings went on quite unhampered in all three tubs, and very soon normal and vigorous seedlings developed in all of them; growth was more especially marked in tub No. 3. This proved that dipping of gram seeds in 1/1000 corrosive sublimate has no deleterious effect on the living cells of the embryo within.

Time Required for Killing the Spores with Corrosive Sublimate.

A loopful of broth culture of this spore-forming bacterium was dipped in 1/1000 corrosive sublimate in a test-tube, out of which a loop was taken at intervals of six minutes, ten minutes, and 20 minutes, and these were put separately in large volumes of broth media in big flasks. These media, tested after three days, showed no growth, indicating that the spores were killed.

Inoculation of Healthy Rice.

Market rice-grains autoclaved in a big petri dish were inoculated with saline emulsion of the spore-forming bacterium from fresh agar slant. The dish was kept in a glass vessel containing water at its base under the cover of a bell-glass to maintain the humid atmosphere. In course of three days the grains became heavily infected, and looked soft and cloudy all over, instead of showing one single white streak inside. When such grains were dipped in watery corrosive sublimate 1/1000 for four minutes, and washed in sterile distilled water as before, and were introduced broken with the help of a sterilised scalpel into the agar media, all the media remained perfectly sterile. But if these grains, after being dipped in 95 per cent. alcohol for two or three minutes, and washed in sterile distilled water, were introduced, aseptically broken, into the agar media, all of the tubes showed growth of the same spore-forming bacterium. Also, if the grains were boiled in water for an hour and a half and then put into agar tubes, all of them showed abundant growth of the same spore-forming bacterium. Such inoculated grains were fixed in cellulose acetate in acetic acid, imbedded in paraffin, and were sectioned in microtome 4 to 6 μ, sections were nicely stained with Gram's iodine, none of the slides showed the presence of a single bacterium inside. These spore-forming bacteria were found to be proteolytic by inoculating solid egg media with them, and watching the liquefaction of the solid media in course of four or five days, the sporing bacteria themselves thriving in such media.

Conclusions.

So it is likely that this spore-forming bacterium, referred to as proteolytic, as well as the fungi (Rhizopus, Aspergillus, and a Mucor), mentioned in an editorial article in the *Indian Medical Gazette*, October, 1922, under the heading Epidemic Dropsy of Bengal—A Problem Solved, are only external contaminators. Their presence in the culture-media might be due to incomplete sterilisation of the outer surfaces of rice-grains as well as of almost all other fruits and seeds. Rice-grains in gunny bags are invariably stored almost in every house and shop in more or less damp, partially dark, ground-floor rooms and store-houses, where the temperature and humidity are usually high during the rainy season; a large number of grains damaged by boring insects are frequently found with healthy unbroken grains, and very few people take care to separate one sort from the other.

Under these circumstances it is inconceivable how, the organism being the same (the same spore-forming bacterium being present on the outer surfaces of both healthy and diseased rice), the conditions of development being the same—viz., high range of humidity and temperature—and the substratum on which the organism develops being the same (damaged grains being almost always present in a collection of healthy grains however small), it can in some grains succeed, and in others completely fail, in producing bodies (? amines) giving rise to epidemic dropsy. So long as no special conditions are made out, we must discredit this chance production of amines as a cause of epidemic dropsy.

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A CASE OF SPONDYLITIS DEFORMANS IN A KINKAJOU.

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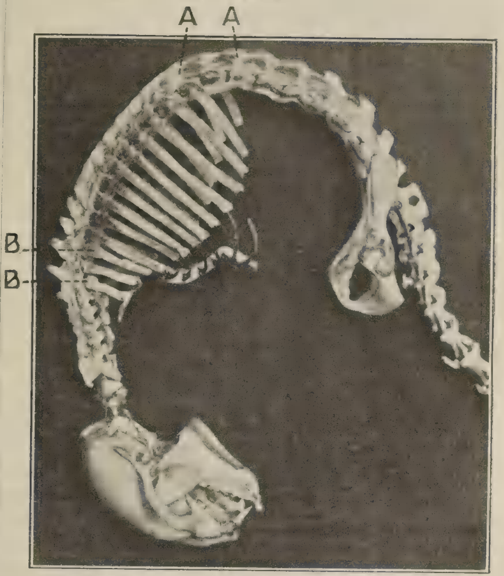
Spondylitis deformans is by no means common in man, and is apparently almost unheard of in the lower animals. There is a case recorded by Backmund as having occurred in the horse, but it has not been possible to verify the reference.[1] The kinkajou (*Potos caudivolvulus*), hab. Brazil, is one of the Arctoids—that is to say, it is placed between the coatis and the racoons. It is therefore closely related to the bears. Although strictly speaking a carnivore, it is actually a vegetarian, subsisting chiefly on fruit. It obtains the name of "caudivolvulus" from its powerfully prehensile tail. It is nocturnal in its habits. The history of the case throws no light on the origin of the disease.

FIG. 1.



General aspect of the deformity. A, Ossified interspinous ligament. B, Foramen unaffected.

The animal, a female, had been at the Zoological Gardens from 1917 to the end of 1923. The previous owner had kept it for over a year. It had been bent and rigid all the time. When walking it had the appearance of an inverted U, the knees and elbows being kept extended. The flexed position of the spine caused the head to be approximated to the abdomen with the snout pointing straight downwards. The prehensile power of the tail was fully maintained. It was decided that it was necessary to destroy the animal, but previously to this it was X rayed by Dr. W. L. Salmond, hon. radiologist to the Zoological Society.

The radiograph showed well the calcification of the anterior common ligament, especially in the lumbar region, and a gap opposite the juncture of the thirteenth and fourteenth dorsal vertebræ, which was subsequently verified in the skeleton. Unfortunately the cervical vertebræ were obscured by the assistant's hand holding the animal, but the importance of the X ray lay in the fact that the knee, ankle, elbow, and wrist were all shown as healthy, as were the metatarsals.

The animal was killed and a post-mortem examination of the viscera showed no abnormality in them. The body was fat and the coat in good condition. The hip- and shoulder-joints were dissected and found to be healthy. The body was then macerated, and the skull, vertebral column, pelvis, and the proximal half of the tail mounted as in Fig. 1, showing the general posture. The skull and atlas vertebra separated during maceration, and some of the teeth, which had been previously noted to be healthy, were lost. The rest remained intact.

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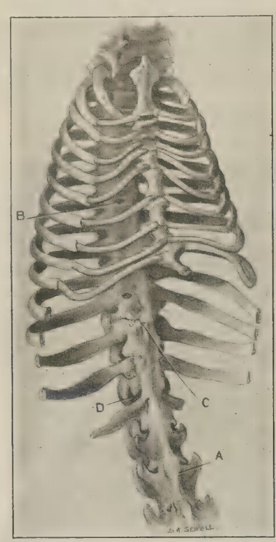
[1] Deutsche tierärztliche Wochenschrift (Hanover), 1910, 486.

A close examination of the bones showed that the skull and the caudal vertebræ, except the first three, were healthy; these parts were white and smooth, while the rest was a dirty grey, with rough surface. The pelvis was grey. The teeth were healthy except the left lower canine and the bicuspid posterior to it, which were black and worn, but apparently had only recently become so.

FIG. 2.



Drawing of anterior view. A, Anterior common ligament calcified. B, Gap in its calcification. C, Incomplete calcification. D, Foramen not affected.

With regard to the vertebræ, the atlas was free and the axis nearly so. The remaining cervical vertebræ were joined by ossified inter-transverse and inter-spinous ligaments. The inter-vertebral discs are small but distinct between vertebræ 2, 3, and 4. The lower ones are less distinct owing to ossification of the anterior common ligament. Between the first four thoracic vertebræ the inter-transverse ligaments are ossified. Between the remaining 12 the inter-spinous and anterior common ligaments are also calcified completely, except for small gaps in the latter (see Fig. 2). The ossification between vertebræ 13 and 14 is not complete, bearing out the radiographic finding. The capsular ligaments of the ribs are all calcified. The lumbar vertebræ are all ankylosed except the last. The articulation between this and the sacrum appears normal. The inter-spinous ligaments of the first two caudal vertebræ are calcified. The cartilages of the hip-joints and the head of the femur appeared normal, but there was early ossification of the capsular ligament, as shown by bony outgrowths round the site of its origin. The deformity of the sternum was well marked and is of postural origin.

In attempting to put this case into one of the recognised groups the difficulty is encountered of the ignorance of early history and symptoms. It is not an ordinary rheumatoid arthritis, as the absence of disease from the cartilages and the freedom of the peripheral joints from disease are not in line with this type. The next group, von Bechterew's, "la kyphose hérédo-traumatique," is also unlikely, as the lesions in this group are chiefly in the cervical and upper dorsal vertebræ. In the specimen the lower thoracic and lumbar vertebræ are most affected. Further, it is unlikely that the animal would have survived the meningitis which accompanies this form; also there were no signs of nervous lesions, and the spinal foramina are not narrowed. Therefore the Strumpell-Marie type, "spondo-rhizomelique," with the chief site of the lesion in the lumbar vertebræ, is the most suitable group in which to place it.

The origin of the disease in any case is obscure, even in man. Here, at all events, gonorrhœa and syphilis can be ruled out. Heredity also is very improbable, since no animal with even a slight degree of this disease would be likely to survive in the wild state long enough to propagate its species. On the whole, therefore, an injury either just previous to or at capture is the most probable factor of origin.

UNUSUAL CUTANEOUS METASTASES IN CARCINOMA OF THE BREAST.

BY W. D. NEWCOMB, M.B. CAMB.,
ASSISTANT PATHOLOGIST, ST. MARY'S HOSPITAL, LONDON, W.

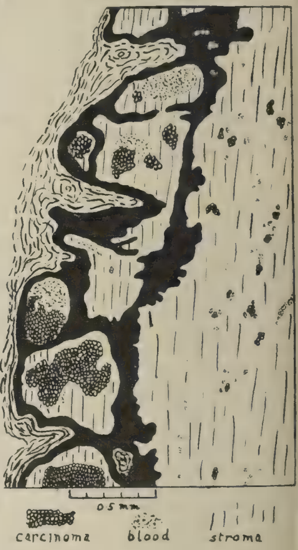
THE following case is of some interest from both the diagnostic and pathological points of view.

A woman, aged 73, was admitted to hospital in January, 1924, with a history of having had a blow on the left breast five years previously. In July, 1923, she noticed that the breast on that side was shrunken and discoloured. This discoloration spread over the whole chest wall in two or three months.

Condition on Admission to Hospital.—In the left breast was a hard lump about 3 inches in diameter, with an ulcer 1 inch in diameter in the centre. The crater of the ulcer was where the nipple had been. Multiple dark nodules, varying in size from 0·3 to 4 c.m. diameter, were seen over the whole of the chest; most of these were raised above the skin, while near the right breast were several larger warty growths. The left arm was swollen and painful, and a mass of glands was felt in the left axilla. The pigmentation of the cutaneous nodules was so noticeable that the condition was diagnosed as melanotic sarcoma by the surgeon in charge of the case. She died on Feb. 1st.

Post-mortem Examination.—This was performed on the day the patient died. The condition externally was practically the same as on admission. The mass of glands in the left axilla was found to have involved the axillary vein, which was thrombosed. Secondary growths were found in the left cervical and subclavicular lymphatic glands and in the liver. None of these growths was pigmented. On examining the skin carefully, it was noticed that while many of the nodules were deep purple, others showed a range of colours from lighter purple to pale pink. On cutting across a few of them it was obvious from the oozing that the colour was due to blood and not to a melanin pigment.

Microscopically the primary growth is a carcinoma simplex of the breast, consisting of rather large polygonal cells arranged in solid alveoli and trabeculæ. The skin nodules are more interesting. The larger ones show a papillomatous overgrowth of squamous epithelium lying on a core of secondary carcinoma. In some places the carcinoma appears to have formed small cysts in the epidermis itself, many of these cysts containing blood as well as growth. Serial sections show that they are not true cysts, but that the carcinoma has grown along lymphatics up to the surface epithelium and has then mushroomed out. At the same time the epithelium has grown even more rapidly, and the space between it and the carcinoma is filled with blood.



Many of the most deeply pigmented areas are but slightly raised above the surface. These show little proliferation of the squamous epithelium, but the carcinoma is growing in dilated capillary spaces. These spaces again are much too large for the small nodules of carcinoma growing in them, so that in many sections they appear simply as dilated capillaries filled with blood. In fact, the picture reminds one of a cavernous hæmangioma. It can be shown, however, that carcinoma cells are growing into all these blood spaces. In other areas numerous newly formed capillaries can be seen near small groups of carcinoma cells. This formation of new capillaries is quite abnormal, and is a prominent feature of some of the sections.

The accompanying semi-diagrammatic figure shows the proliferation and hyperkeratinisation of the surface epithelium which is drawn dead black. Masses of carcinoma can be seen apparently growing in cysts in this epithelium, and two of these cysts contain blood. In the dermis several small groups of carcinoma cells are shown with many new-formed capillaries near them.

Two features stand out in this case: (1) The proliferation of the squamous epithelium over the carcinoma instead of the usual ulceration. I have not seen this before, nor have I been able to find a description of it. Erichsen[1] describes a brownish discoloration of the skin, with the formation of desquamating crusts resembling the bark of a tree. This, however, would not appear a suitable description of this case. (2) The proliferation of vascular endothelium. Although it has not been possible to demonstrate any heaping up of endothelium, the formation of new small capillaries and of large dilated blood spaces must mean, at any rate, slight endothelial proliferation.

Drew[2] has shown the presence of a growth stimulating substance in carcinomata, and it is well known that sometimes the inoculation of a mouse with mouse carcinoma stimulates the stroma to produce a sarcomatous type of growth. It is possible that this is one of the rare cases in man where a similar condition has occurred. The carcinoma has caused a hyperplasia of both the squamous epithelium and the vascular endothelium.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PSYCHIATRY.

THE LAW REGARDING CRIMINAL RESPONSIBILITY OF THE INSANE.

AT a meeting of this section on May 13th, under the presidency of Dr. T. B. HYSLOP, the subject set down for discussion was the proposed changes in the law regarding criminal responsibility of the insane.

Mr. DONALD CARSWELL opened with a presentation of the legal aspect of the question. He said the rules in the famous McNaghten case expressed the present law of England on this matter, and that there were only two points touching the credit of the McNaghten rules. The first was that those rules were unique in English law in that they had acquired the force of law without previous Parliamentary enactments or judicial decisions; they were merely the opinions of 14 out of 15 common law judges on certain questions framed for them by the House of Lords in 1843. He thought it was questionable whether those judges expected that their opinions would pass into English law. Neither had the rules been argued before the Court of Criminal Appeal. That court had not affirmed them on their merits. The second point was that it remained for the late Dr. Charles Mercier to show that the questions framed by the House of Lords were not those which in fact the judges answered; they substituted questions which they were able to answer.

The question being discussed at the present time, he said, was whether those rules should continue to have the force of law. Many were not satisfied that the rules ensured or secured certainty. It was said that without some more or less arbitrary guide, such as the McNaghten rules, there was likely to be a hopeless muddle. The alienist truly said that insanity was a relative term, and he only regarded his general experience of mankind; it was not enough for him that, relative to that experience, the patient who was suffering from general paralysis of the insane required a lunacy certificate. How could one define the criminal responsibility of the insane without inquiring into the whole concept of responsibility in general? Why should a mere statement of criminal responsibility involve a roving commission over the field of ethics? Punishment was given in accordance with the ethical standards prevailing at the time; there was no eternal and absolute standard. The great question to be answered was, did the McNaghten rules, according to our standards, do justice to insane persons who were charged with crime? If not, how was such justice to be secured? Mercier defined responsibility as that which was rightly liable to punishment, explaining that he meant by that, liable to punishment on grounds which appeared fairly just to the ordinary man when they were explained to him, and which commended themselves as equitable and right to the common man of this time and country.

Mr. Carswell went on to speak of the Memorandum submitted last year to Lord Justice Atkin's Committee on the subject by the Medico-Psychological Association, which the speaker considered not only of great interest, but also of permanent value. It was not accepted and acted upon, but he could claim it had not been answered. The conclusion of that document could be briefly stated as follows: No man should be liable to punishment for a criminal act committed during and by reason of insanity, and if it be proved that the act was committed during insanity, there was a presumption—which it was for the prosecution to establish—that it was committed by reason of the insanity. In other words, the jury must be instructed that they must not convict unless the prosecution had satisfied them that the insanity had nothing to do with the crime. The Atkin Committee asked how juries could be got to convict if this proposal were adopted. Mr. Carswell said he agreed with the Medico-Psychological Association's Memorandum, though he was in a minority amongst lawyers. He regarded the McNaghten rules, and all rules on the same model, as bad and useless anomalies, and calculated to defeat the ends of justice. The doctrine of irresistible impulse had achieved a larger measure of agreement between lawyers than had anything else, their agreement being that it was meaningless and impracticable, and that the sooner it passed into the limbo of vain imaginings the better. A great point about such impulsive states as epileptic insanity and puerperal mania was, not that the obsessions constituted irresistible impulses, but impulses resistible which had not been resisted. Such states did not carry immunity from punishment, but were just those in which a deterrent had the desired effect, as in the case of the soldier at the front tempted to run away, but the knowledge that he would be shot if he did kept him to duty.

The following point, he considered, ought to be put to the jury in such cases: Are you satisfied on a fair review of the evidence that the prisoner's act proceeded from a diseased mind? If so, you will acquit him; but if you think his act proceeded from pure wickedness of mind, you will find him guilty.

Discussion.

Dr. R. H. COLE said Lord Justice Atkin's Committee was to some extent hampered by having two separate medical reports, one from the British Medical Association as well as from the Medico-Psychological Association. In 1896 the feeling against the McNaghten rules was very strong, and the committee of that date set to work fully intending to advise that they be abrogated. But after giving a good deal of consideration to the matter they decided the rules could not be improved upon. Dr. Maudsley was the first medical man to attack those rules, and Maudsley's point was that at the back of the ordinary faculties of mind were the instinctive and emotional activities, which were largely responsible for criminal acts. If any attempt was to be made to tinker with the McNaghten rules, the speaker suggested that the question of defective reasoning should be left out, restricting the question to one of actual disease of the mind. He personally agreed that the rules should be abolished, and though eventual justice was done to the prisoner, he thought much injustice had been done to insane persons who committed criminal acts in the performance of the ritual attaching to a condemned prisoner on the capital charge, the judge meantime well knowing the ultimate goal was Broadmoor Criminal Lunatic Asylum. The Court of Criminal Appeal did much to undo the errors of juries, for the latter frequently gave little or no weight to medical evidence. In many cases the McNaghten rules hampered the medical man in giving his answers to questions. Logic required that degrees of insanity should be recognised, and that in minor degrees of that malady the person was not altogether irresponsible. The law must draw a hard-and-fast line, but the medical man could not say exactly where health ended and disease began. Doctors were not agreed on the subject of irresistible impulse, but it would help to have it included in the law of the land; the judges would see that it was not abused, and they were now more learned in medico-psychological matters than in times past.

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[1] Erichsen: Science and Art of Surgery.

[2] Drew: Brit. Jour. Exp. Path., vol. iv., p. 51.

Mr. A. H. TREVOR (Commissioner, Board of Control) expressed his agreement with practically everything Mr. Carswell had said. The first question which should be asked was: Did the man know right from wrong? If he did, did he know the nature and quality of his act? Many people who were insane committed crimes well knowing the nature and quality of their act, and who, moreover, showed they were capable of much forethought and cunning in planning and carrying them out. With regard to uncontrollable impulse, if the tests proposed were not complete, they should be done away with. He, the speaker, believed that as soon as a person was proved to be the subject of genuine mental disorder the whole question of responsibility went by the board. He did not desire to see any alteration in the Criminal Lunatics Act, 1884: that should be taken with the Trial of Lunatics Act, 1883. Under the latter, the defence which had to be proved was, that the person concerned was insane so as not to be responsible, not that he was so insane as to be irresponsible. He, and those who thought with him, considered that it was a blot on the law of England that the kind of thing brought about by the McNaghten rules should be permitted to continue.

Dr. J. CARSWELL (Commissioner, Scottish Board of Control) confined his remarks to two points. The first was that the claim made before Lord Justice Atkin's Committee by the Medico-Psychological Association, based, as he contended, upon the considered judgment of those best entitled to speak on the matter, amounted to this: that the fact of insanity should be put to the jury. In two cases certainly this was not done; the question put to the jury was, Was the person insane so as not to be responsible in law? He did not think Lord Darling's Bill would settle this controversy, nor, indeed, would any other measure on similar lines.

The PRESIDENT said that insanity was incapable of definition, so also was sanity; attempts to define one or the other revealed a narrow comprehension as the terms were indefinable, hence there could be no line of demarcation between the two. The same held good with regard to responsibility. Until a definition of responsibility was agreed upon it could not be said what irresponsibility consisted of. Unfortunately, the questions of insanity and responsibility were intermingled. Doctors were questioned in courts of law as to sanity or insanity, but they were not allowed to express any opinion as to responsibility, yet in that lay the crux of the question. Learned judges, in charging the jury, held that it was for them, the jury, to deal with the question of responsibility. All who had had experience of the courts would recognise that as the truth. With regard to the McNaghten ruling, one had often encountered cases in which this ruling had been applied to the criminal who did not come within its provisions at all, and the criminal, having been found guilty, suffered the extreme penalty of the law. He asked what the McNaghten ruling had to say about somnambulism, the dream-state, epileptic automatism, and various types of epilepsy, and replied that it had nothing whatever to say about them. It was pathetic to sit in court and hear a jury being charged to apply rules which had no bearing whatever on the case; it was quite a frequent occurrence. This early Victorian ruling of 1843 was applied indiscriminately to all and sundry. The ruling should be banished from the courts, and every case treated on its merits, medical witnesses being allowed to give evidence on responsibility, not on insanity alone. This subject could not be dealt with conclusively until Harley Street was recognised on the question of responsibility.

Mr. CARSWELL, in acknowledging a vote of thanks for his paper, referred to a case which occurred 20 years ago, involving an obvious miscarriage of justice from the application of the McNaghten rules. He felt very strongly that these rules ought to be done away.

TUBERCULOSIS SOCIETY OF GREAT BRITAIN.

A MEETING of this Society was held at the Margaret-street Hospital for Consumption on May 16th, Dr. ERNEST WARD, the President, being in the chair.

Mr. FRANK KIDD read a paper on

Tuberculosis of the Urino-genital Tract.

Tuberculous lesions occurred especially commonly in young, ill-nourished adults, at a time when sex life is very active. These lesions could be confined to the urino-genital tract, in which case the prognosis was better than if the patients had lesions elsewhere. Mr. Kidd confessed to a clinical impression, which he had not yet confirmed by laboratory tests, that the more chronic cases were infected by the bovine strain, and the more acute by the human strain. The disease often remained unilateral for a long time, and often when both kidney and testicle were infected the lesions were on the same side. Cases with tuberculosis of the kidney were often nursed too long before they were taken to the surgeon, because medical men throughout the country were not familiar with the cardinal symptoms. The presence of both pus and tubercle bacilli in the urine made diagnosis certain, but cases should be diagnosed long before these symptoms manifested themselves. Most cases at the onset showed frequency of micturition and pain, localised at the neck of the bladder, at the end of micturition. Wasting, anæmia, and fever were generally absent. It was difficult to find tubercle bacilli in the urine, and this should be injected into a guinea-pig in suspicious cases. Pain in the kidney was usually absent for a long period, and often if pain were felt it was the healthy kidney that ached; but this was a late sign. Renal colic was uncommon. Sudden hæmaturia might occur. The general condition of the patient was good at first, and pyrexia was absent, unless there were a secondary infection. As to the physical signs, it was hard to feel any enlargement of the kidney in the early stage; again, the larger kidney might well be the healthy one. An expert could feel a thickened ureter per rectum or per vaginam, but this was not easy for the inexperienced. In males tuberculous nodules might be found in the prostate or testicle. In these cases, unless the urine was quite clear of pus, cystoscopy should be done at once. The presence of pus as well as of tubercle bacilli was of importance, since the tubercle bacillus might be filtered out through healthy kidneys. If the patient had pyuria it was necessary to get a specimen for examination, and the problem arose whether a catheter specimen was required. Nowadays the smegma bacillus could easily be distinguished morphologically by pathologists from the tubercle bacillus, and owing to the danger of setting up a secondary infection Mr. Kidd did not advocate passing a catheter in males. A much safer method was to use an ordinary irrigator with a urethral nozzle to wash out the urethra, and then to get the patient to pass urine into two glasses, using the second glass for examination. In females the catheter had to be passed, but the precaution should be taken to inject a weak antiseptic—for example, oxycyanide of mercury, 1 in 4000—before the catheter was withdrawn. In 30 per cent. of cases with renal tuberculosis pathologists were able to find bacilli. On the other hand, an expert could diagnose 90 per cent. or 95 per cent. of cases by means of a cystoscope, and this was the most certain method of diagnosis. When tuberculous infection was regarded as certain both ureters had to be catheterised. There was usually pus coming from one side to incriminate the kidney on that side. Functional tests should always be done. Mr. Kidd preferred the indigo test to urea-concentration tests, since he regarded it as dangerous to leave catheters in situ over a long period. Blood-urea was not a very useful test, since in his experience a positive result was only obtained in late inoperable cases, not in early operative ones. X rays were useful to confirm cystoscopic and pathological findings. Some patients were almost impossible to cystoscope, even with spinal anæsthesia, which was the most useful method in late cases with ulcerated and very sensitive bladders. When cystoscopy was not possible it was Mr. Kidd's practice to make a small incision of one inch in the middle line and to feel the ureters. If one were thickened the corresponding kidney was regarded as the infected one, and the patient had to run the risk of its removal. Differential diagnosis was mainly from *B. coli* infections. These were characterised by remissions and by high fever during attacks. Stone could be excluded by X rays. Patients with tuberculosis in other parts of the body should always be watched for frequency and pus in the urine. Spontaneous cure of renal tuberculosis was unknown, although some cases might live for 20 years or more. Apparent cures were not uncommon, and were due to the fact that individual lesions in the ureter may heal, and the ureter may become fibrosed and closed up completely from time to time; but if the case was carefully watched it would be found that infected urine bursts through again after a certain time. The operative mortality nowadays in the hands of competent surgeons was not more than 2 per cent.; in the 65 cases operated on since 1912 on which Mr. Kidd had founded his remarks that evening there had been no deaths. Thirty-eight had been followed up and were cured. Of these 28 had been traced quite recently, and had lived in good health for periods varying between 1 and 14 years. Nine cases were very much improved, eight were apparently cured, but had not recently been seen, ten were dead. In many of these cases the wound had healed by first intention, special operative methods to avoid infecting the wound having been taken. After-treatment was important. If the patients went back to work too early, or if they were not given adequate and suitable food, the mortality rose. Comparisons of results of surgical and medical treatment in these cases showed that results were much better with surgery. Wildbolz, of Berne, who had published a large series of cases with very good results, estimated that three-fifths of his cases became completely well, but that if the patient was not well in three years the chance of ultimate recovery were poor. Mr. Kidd quoted instances of women who had had a tuberculous kidney removed, and got through a subsequent pregnancy without harm.

Tuberculosis in the Testicle.

When both the kidney and the testicle were affected it was well to remove the kidney, since the testicle often cleared up, but when the testicle alone was infected Mr. Kidd was inclined to temporise, since these lesions often healed up quite well on tuberculin, or at least became quiescent. He only advised removal if (1) there was a kidney lesion also, (2) if tuberculin failed to act, (3) sometimes in bilateral tubercle if there was pain. He had no doubt himself that tuberculin had a specific action on tuberculosis of the ureter and testicle and especially on the bladder. It was even dangerous to give tuberculin to bilateral kidney cases, since the ureteric lesion might heal and become fibrosed so as to block up the lumen. He found Koch's new T.R. the most useful, and urged that too big doses should not be given; 1/100,000 up to 1/5000 mg. should be administered and never more than 1/5000. He had tried Dreyer's vaccine on one very early case with no success. He had had some success with artificial sunlight and with real sunlight in cases sent to Rollier at Leysin. As to preventive measures, he advised patients who had once been infected to drink only cooked milk and to keep away from acquaintances with tuberculosis; also not to go back to work too soon, and not to work too hard.

Discussion.

The PRESIDENT thanked Mr. Kidd for his masterly summary of a difficult subject. He said that tuberculosis of the lung was more common in France than in England. He wondered whether tuberculosis of the genito-urinary tract was also more common. He had understood that Dr. J. H. Sequeira and Dr. Louis Cobbett, working in different fields, both held that it was impossible to distinguish clinically bovine and human bacilli. He asked Mr. Kidd to explain what was the lesion seen in cystoscopy which enabled experts to diagnose tuberculosis of the bladder or urethral orifices so quickly. Was it a retracted ureter, and did not this sign also occur in *B. coli* infections? Dr. Ward had tried Dreyer's vaccine in two cases with no benefit to the patients.

Dr. T. Y. PEYTON asked whether Mr. Kidd meant to suggest that tuberculosis in the genito-urinary tract was primary? Since such wonderful results appeared to be obtained by surgery in genito-urinary tuberculosis, was it not possible that the present tendency was to concentrate too much on the constitutional element in the treatment of other forms of tuberculosis? He asked whether bacillæmia was often found after operation.

Dr. H. A. ELLIS had not been successful in differentiating bovine from human infection by clinical differences. He suggested that if Mr. Kidd sent the infected kidneys after removal to Mr. Stanley Griffiths, he would probably be glad to isolate the strain, and confirm or disprove the clinical diagnosis.

In reply, Mr. KIDD said that bacillæmia used to be not uncommon after operation, but nowadays it was customary to cauterise the end of the ureter, and also to take out a large quantity of fat with the kidney so as to avoid disseminating the infection. He could not give a picture of the bladder condition which suggested tuberculosis to the expert, but there was no doubt that it was easily recognised with practice.

THE LATE DR. W. SCOWCROFT, OF CHEADLE ROYAL. On May 17th, at the age of 70, Dr. Walter Scowcroft, of Cheadle, passed away at his residence, St. Ann's Cottage, Cheadle. After completing his academic career at Owens College Medical School, Dr. Scowcroft qualified as M.R.C.S. in 1879, and ten years later as L.R.C.P.I. He was a house surgeon in the Royal Infirmary, Manchester, and for some years assistant medical officer in the great lunatic asylum, known locally as "Cheadle Royal," of which, on the retirement of the late Dr. Mould, he became medical superintendent, an office he resigned a few years ago. Many old medical students at the University of Manchester will retain a pleasant recollection of Dr. Scowcroft, of the knowledge he imparted to them as lecturer on mental diseases, of the journey by coach to and from Cheadle, and of Dr. Scowcroft's unfailing hospitality.

Reviews and Notices of Books.

History of the Great War.

Medical Services, General History. Vol. III. By Maj.-Gen. Sir W. G. Macpherson, K.C.M.G., C.B., LL.D. London: H.M. Stationery Office. 1924. Pp. 556 + viii. £1 1*s.*

Each volume of the medical history of the war, as one reads it, compels admiration for the skill and patience of the editor, who from the myriad threads of fact has woven so even and well-patterned a web of history. This volume deals with the evolution of medical organisation in the field. In the common conversation of the profession, medical organising power is usually given second place to advanced surgical or medical skill. Yet the ablest surgeon is no help to a man lying wounded five miles away in the middle of a muddy field, and it is the organiser who brings the patient quickly to the surgeon specialist whom he has already provided with a well-warmed and well-lighted operating theatre and all necessary equipment. The skilled surgeon saves men by dozens in the day; the skilful organiser may bring relief to thousands.

In this section of the History we learn how it was managed. The regimental stretcher-bearers go and find the wounded and bring them to the doctor at the regimental aid-post; whence the field ambulance-bearers take them to the main dressing stations, whence the motor ambulance convoys remove them to the casualty clearing-stations of the division, through which they reach the hospital trains. Only very precise and well-considered arrangements made in the Fourth Army before the battle could have relieved its casualty clearing-stations of 14,936 wounded on the third day of the battle of the Somme in 1916. Motor ambulances and other modern devices, indeed, made this possible, but all have behind them the devotion of the men who, in relays every 600 or 800 yards, sheltered perhaps as they waited by derelict tanks, carried the stretchers at the front. Knee-deep in mud they were on the Somme. And it was not only mud they met: as they carried the wounded across the Piave in 1918 they were waist-deep in the river. In Palestine at times the mud was so deep and universal that only camels, with their soft, spreading feet, could cope with it. In early 1918 in Palestine the troops were on half rations in the heavy rains, and two mounted divisions and a brigade, and 4000 horses besides, had to be sent back temporarily to the advanced base, as food could not be brought up for them.

The editor tells, and tells with special approval, of the clever scheme of the D.D.M. of the XXIst (the Western) Corps, Col. E. P. Sewell, to provide for the care of the sick and wounded in the great advance (p. 449). This advance became notable later for the sickness that developed. The Desert Mounted Corps, in six weeks, sent back of wounded only 300, but 11,300 sick. This sickness was at first due to malaria, arising as soon as the troops got away from their well-protected stations, but later to influenza.

Influenza is first mentioned in France and in Italy in May and June, 1918; cases were only slight but sufficiently numerous to disable a division and prevent an already planned attack (p. 259). It is next reported from Syria and Damascus in early October, and about the same time it recurred both in France and Italy, but this time seriously complicated with broncho-pneumonia. Medical officers of hospitals were, of course, trying all the time to make their patients more comfortable, but sometimes their zeal would seem to have almost been excessive. A casualty clearing-station is supposed to have 23 tons of equipment transportable in eight lorries. After a long stationary period, one of these, being ordered to move, had 100 lorries' load of stores, of which 10 were road metal.

In reviewing the first of these volumes in 1922 we noted that the only person against whom an error of judgment was alleged was a civilian. This volume is more judicial, though in certain cases omissions may occur in allotting the credit due. In such a work these things are inevitable, though it is clear that great care has been taken to avoid them. For example, Lieut.-Col. C. Garner, mentioned without emphasis on p. 381, was the Director of Public Health in Egypt, who worked with such energy and success in coping with the difficulties of embarkation at Gallipoli (p. 370). The Egyptian medical officers of the Egyptian Public Health Hospitals are stated to have given the greatest satisfaction by their work, "both as regards the comfort of the patients and results."

An interesting and well-printed book, with excellent maps.

Orations and Addresses.

By Sir John Bland-Sutton, Consulting Surgeon to the Middlesex Hospital. London: William Heinemann (Medical Books), Ltd. 1924. Pp. 161. 10*s.* 6*d.*

Sir John Bland-Sutton has done well to publish in book form twelve selected orations and addresses which he has delivered in divers places and has published in sundry journals; and, seeing what an interesting and charming volume has resulted, we are gratified to remember that we had the pleasure of putting before our readers several of the most important chapters with their apt and amusing illustrations. The place of honour in the volume is given to the Hunterian Oration of 1923, which will long be remembered by those who heard it as a masterly description both of the range of work of John Hunter, the patron-saint of surgery, and of his personality. Sir John Bland-Sutton has followed Hunter's labours in all details and has, further, gone over much of the actual ground where those labours were carried out; in fact, the second chapter of the book describes Hunter's investigations in Portugal, mainly into bird life and the phenomena of migration. The Hunterian Oration is an admirable supplement to many previous orations, because it reveals so clearly the manner of man that Hunter was. He is seen to have been a practical worker of limitless curiosity and a philosopher capable of the largest generalisations, while he was an untiring researcher and scrupulous in all details, knowing that the largest inferences may derive from the smallest facts. But he was not a literary man; he read few books and had no gift of exposition. It is perhaps for this reason that year after year Hunterian lectures prove valuable; they serve not only their pious object of keeping Hunter's fame alive, but they supply the reasons for that fame which Hunter's own written work often left in uncertainty.

The President of the Royal College of Surgeons of England is a disciple as well as an admirer of the great John Hunter, for, as will be seen in this multifarious collection of essays, his curiosity in respect of pathological manifestations knows no limits, and while he is an accurate and reverent chronicler of the exploits of the past, he is abundantly ready to recognise the value of the work of to-day and its promise for to-morrow. The range of the essays is very large, and every man who has some conception of what biology means will find in them something informatory, challenging, or amusing.

Venereal Disease.

Its Prevention, Symptoms, and Treatment. Second edition. By Hugh Wansey Bayly, M.C., Hon. Sec., Society for the Prevention of Venereal Disease, &c. London: J. and A. Churchill. 1924. With 58 illustrations. Pp. 176. 7*s.* 6*d.*

This is the second edition of a well-known little handbook of which the first part deals with the prevention of venereal diseases, and the second with their description, symptoms, and treatment. The first is the more important, we presume, from the standpoint of the author, and puts forward his well-known views as to prevention by means of self-disinfection. The position in regard to self-disinfection and its results is, we imagine, now well recognised by medical men and many of the laity and legislators. Mr. Bayly has set it forth here clearly, concisely, convincingly

The second part of the book is well written, and can only be a synopsis, but within these limits it is excellent. The whole of the work is easily intelligible by people who are not specialists in venereal diseases, and should be read by them with profit. We must regret Mr. Bayly's reference to his legal controversy with Lord Astor arising out of matter connected with the author's election campaign at Plymouth.

SUNSHINE AND OPEN AIR.

By LEONARD HILL, M.B., F.R.S., Director, Department of Applied Physiology, National Institute of Medical Research. London: Edward Arnold and Co. 1924. Pp. 132. 10*s.* 6*d.*

A COMPENDIOUS study of the effects of sunshine and open air has long been needed and is specially welcome when it appears in comprehensive, concise, and readable shape. Dr. Hill begins with a few pages about that paradox of nature, the Alpine winter climate, which has the remarkable property of simultaneously scorching and freezing the body. These two factors, although unpleasant when acting independently, yield a resultant which has the rare quality of being both delightful and health-giving. Further considerations lead the writer to the conclusion that the least healthy surroundings are those which involve cold feet and warm humid air. These conditions are all too common in modern houses where cold draughts chill the feet while the head is surrounded by warm stagnant air. In these circumstances the nasal mucous membrane becomes boggy, congested, and covered with thick secretion. The Alpine climate provides the contrary condition; the air surrounding the head is cool, while the feet are on ground which is well warmed by the sun. The mucous membrane of the nose is pale, taut, and free from secretion, infection being guarded against by a free flow of lymph, which evaporates as soon as it reaches the surface. Dr. Hill considers the expression "catching a cold" to be misleading, and explains the popular belief that draughts are the cause of colds by the fact that during the initial period of the infection there is slight fever and consequently increased susceptibility to cold. He believes that the resistance of the lungs to disease is increased in a similar way by Alpine air, which causes increased evaporation from the respiratory membrane and consequently a greater flow of blood and lymph.

In the chapter on sunshine, Alpine and English climates are again contrasted, and it is found that the Swiss health resort Montana has about as many hours sun in winter as England has in summer, and that the intensity of sunlight, as measured by its capacity to heat black fur, is about the same in a Swiss December as it is in an English July. This difference is due to the greater clearness and dryness of the air at high altitudes; 75 per cent. of the sun's rays reach an altitude of 6000 feet, while only 50 per cent. reach sea-level, and in a smoky city the amount may be reduced to one-third or less.

With regard to the biological action of light, Dr. Hill has repeated Weissner's experiments, which appeared to show that infra-red rays possessed a bactericidal action quite apart from the heat they produced. The conclusion reached was that when the temperature of the bacteria was carefully controlled infra-red rays have no lethal effect. The ultra-violet rays are strongly bactericidal, but their penetrating power is so slight that this property cannot come into play even in the treatment of so superficial a lesion as lupus. Dr. Hill considers that the chief function of cutaneous pigment is to protect the body from ultra-violet rays. The red corpuscles of the blood also act as a screen and convert visible rays into heat. This reaction is believed by some to have considerable influence in the immunising power of the blood. Dr. Hill finally puts forward the theory that ultra-violet rays in damaging the surface cells of the skin stimulate the defensive mechanism of the body, white corpuscles and immunising substances being increased in order to deal with damaged cell products. The rate of metabolism depends to a large extent on the cooling power of the atmosphere, and this in its turn depends on the temperature and humidity of the air. A mist or fog feels cold, but its cooling power is low; on the other hand, the feeling of warmth and a high cooling power frequently accompany one another in the Alps in winter. The relative humidity of the air is not nearly so important for health and comfort as is the "physiological saturation deficit," which is the difference between the amount of water vapour in the air and the amount the air would contain if saturated at body temperature. Great increase in basal metabolism is characteristic of the open-air treatment of tuberculosis and is most beneficial to health. Dr. Hill emphasises the importance of wearing the lightest clothing that can be tolerated without shivering, as it must not be forgotten that however bracing the air its action will not be exercised through thick and impervious clothing.

This book is well worth reading, and although of particular interest to the medical profession, should be much more widely appreciated. Both medical and lay readers will find it full of interesting facts and permeated throughout with shrewd common-sense.

JOURNALS.

QUARTERLY JOURNAL OF EXPERIMENTAL PHYSIOLOGY. Edited by E. SHARPEY SCHAFER and Others. Vol. XIV., Nos. 1 and 2. London: Charles Griffin and Co., Ltd. 1924. Pp. 1–207. 20*s.*—The Effect of Pathological Sera on Plain Muscle, by Lena C. Adam.—Secretion by the Human Fœtal Kidney, by Evelyn E. Hewer. The time when the kidney first becomes functional is very obscure. By examining the kidneys of human fœtuses of different ages by means of differential staining processes, Miss Hewer concludes that the kidney in the human fœtus is certainly functioning as early as the twelfth week of development, and quite probably as early as the ninth week.—Animal Experiments on the Inhibition of Hæmolysis by Blood Serum, by Eric Ponder.—Measurement of the Diameters of Erythrocytes, by Eric Ponder and W. G. Millar. The authors describe in detail a method for the measurement of the red cells in the plasma of human blood, the cells being photographed under suitable optical conditions and measured from the negative. The error in measurement does not exceed $0{\cdot}2\mu$.—The Spindle-cells in Frog's Blood, by L. J. Notkin.—Correlation between Area and Hæmoglobin Content of the Erythrocyte, by Eric Ponder.—Measurement of Colour-blindness in Terms of Wave-lengths, by H. E. Roaf. As a result of an examination of 28 cases of colour-blindness, it was found that the defect is always in the red end of the spectrum. Edridge-Green has found cases of shortening of the violet end of the spectrum, but actual shortening of the spectrum may be due to a different kind of defect than failure to recognise colour. The cases differ in the degree to which they fail to recognise differences in the red end of the spectrum. Some correspond to a cutting off of the spectrum to about $\lambda 6200$, others require the spectrum to be cut off to about $\lambda 5800$, and others require a reduction to about $\lambda 4800$ before the diagram matches the one from which it was copied. The W-L $\lambda 5800$ and $\lambda 4800$ correspond approximately to those regions where the perceptible change in hue with W-L is most marked.—Sutherland Simpson contributes two papers on the effect of thyroidectomy on growth in the sheep and goat as indicated by body-weight and on the cutaneous system. The general conclusion is reached that loss of the thyroids and parathyroids is tolerated much better and for a longer period in herbivora such as the sheep, quietly grazing in a field, than in the more active carnivora such as the dog and fox. In the case of the parathyroids the difference may depend on the characters of the intestinal flora.—G. W. Scarth contributes two papers, one on Colloidal Changes Associated with Protoplasmic Contraction, and the other on the Action of Cations on the Contraction and Viscosity of Protoplasm in Spirogyra. The chloroplasts of spirogyra, normally a gel, may be stimulated to undergo contraction along their long axis. This contraction is reversible. The chloroplast during contraction becomes more plastic until frequently solation takes place. The chloroplast is doubly refractive, due to a regular arrangement of molecules. In several ways the behaviour of protoplasm under the action of cations resembles that of a physical colloid.—Effect of Insulin on the Respiratory Exchange of Normal Animals, by B. R. Dickson, J. J. R. Macleod, and others. The decided rise in the respiratory quotient (R.Q.) in normal animals that have been starved or kept on a protein-free diet that follows the ingestion of carbohydrates does not occur in completely depancreatised dogs provided a few days have been allowed to elapse since the operation. It also fails to occur under similar conditions in severe diabetes in man. The failure of the R.Q. to rise in diabetes, coupled with the fact that the ingested sugar reappears in the urine, indicates clearly that the organism has lost the power to oxidise carbohydrate. This is due to the absence of the internal secretion of the pancreas. When insulin is administered to the depancreatised animal or the diabetic patient the R.Q. behaves as in a normal animal. Insulin not only affects the R.Q., it also lowers the blood-sugar, both when the sugar is at a normal level and when it is greatly above it. These two effects are coupled in the diabetic animal with a third—namely, it restores to the animal the power to deposit glycogen in the liver. The relation between the blood-sugar level and the deposition of glycogen and the oxidation of sugar in normal animals, following the administration of insulin, requires investigation. The authors' observations were made on rabbits and dogs. The results of the administration of insulin were not exactly the same in dogs and rabbits; the authors tabulate and discuss their results. The evidence would seem to indicate that the sugar which disappears from the blood, as well as the glycogen which disappears from the store of this material in the tissues, becomes converted into some intermediate form of carbohydrate, which has no reducing power, and is, therefore, not included in the sugar estimations. It was also found that both the total CO_2-combining power and the total amount of CO_2 of the blood are not significantly lowered as a result of insulin.—T. Graham Brown contributes his twenty-eighth article to the physiology of the nervous system, entitled "Absence of Algebraic Equality between the Magnitudes of Central Excitation and Effective Central Inhibition given in the Reflex Centre of a Single Limb by the Same Reflex Stimulus." The author defines his terminology, and the methods employed of obtaining reflex and other movements in cats—decerebrate and low-spinal, and his deductions from the experimental results.—In a short note W. D. Halliburton and D. H. de Souza describe certain actions of pancreatic juice on milk.

Reports and Analytical Records.

BYNOGEN.

(ALLEN AND HANBURYS, LTD., 37, LOMBARD-STREET, E.C. 3.)

THIS is a concentrated casein-glycerophosphate food, with an approximate percentage composition of sodium glycerophosphate 2 per cent., calcium 2 per cent., magnesium 1 per cent., soluble milk proteins 75 per cent., and soluble extract of malt and whole wheat 20 per cent. The preparation is clearly a substantial food, its effects as a tonic food being enhanced by the presence of the organic phosphates, which are well known to help nutrition. Further, it showed a distinct digestive action on starch, and the test for active enzymes gave a well-marked response. Clinical experience has testified to the value of Bynogen in debilitated conditions generally, and those recovering from severe illnesses have benefited by its employment. A fine, cream-coloured powder, it can be sprinkled on food or prepared as a liquid beverage, the dose for an adult being two or three teaspoonfuls with or after each principal meal. For children half the quantity is sufficient.

ENERGEN BREAD.

(THERAPEUTIC FOODS CO., WILLESDEN, N.W. 10.)

The exclusion of bread from the dietary is the most irksome of all restrictions to which the diabetic patient may be subjected in the effort to reduce the intake of carbohydrates. For this reason many substitutes, more or less resembling it in texture and flavour, have been placed on the market. Those most extensively used are gluten bread and similar products prepared from gluten flour. The processes involved in the treatment of wheaten flour to separate the starch from gluten are laborious and expensive, and for this reason few of the so-called gluten flours are satisfactory from the standpoint of low starch content. Absolute prohibition of starch, however, is no longer regarded as essential in diabetic treatment, the patient being allowed a proportion of carbohydrates in addition to fat and proteins, in relation to his tolerance of the former. This being the case, we think that the manufacturer should state the percentage of carbohydrate in his product, since this practice would be of great assistance to the physician in prescribing a diet.

The Energen bread submitted to us for examination was in the form of rolls each weighing 34½ g. (1¼ oz.). When analysed the following results were obtained:—

Altered starch (carbohydrate) ..	45·0	per cent.
Protein	36·0	,, ,,
Moisture	9·5	,, ,,
Fat	5·7	,, ,,
Crude fibre	0·1	,, ,,
Undetermined	3·7	,, ,,

Ordinary white bread with a moisture of 36 per cent. contains about 53 per cent. of carbohydrates and 6–7 per cent. of protein, so that Energen is much lower in carbohydrates and higher in protein content. While it is true that no claim is made that Energen is free from starch, it is obvious that its use in cases of diabetes will require the supervision of the physician, and the patient should not be allowed to obtain the idea that it can be safely used in any quantities that appetite may suggest.

ATOQUINOL TABLETS AND OINTMENT.

(CIBA BRAND.)

(THE CLAYTON ANILINE COMPANY, LIMITED, 68½, UPPER THAMES-STREET, LONDON, E.C. 4.)

These preparations are put on the market through the English firm by the Pharmaceutical Department of the Society of Chemical Industry, Basle, and present an attempt to deal with uric acid by "getting it out of the system." Atoquinol or allyl-phenyl-cinchoninester has been used successfully with sodium bicarbonate and an increase in the amount of fluid consumed in cases where gouty symptoms were accompanied by urine loaded with uric acid, while the tablets of atoquinol have been of service in gouty urticaria. The tablets are supplied in tubes holding 20 tablets each containing 4 gr. of the drug, and the unguent in collapsible tubes at 20 per cent. strength.

ERRATUM.—An error and a misprint occur in the first line of the recently published report on Kalzana. This preparation was described as "identical with albulactin." The correct constitution was given immediately below, showing that Kalzana is a chemical combination between calcium lactate and sodium lactate. We regret the error which, we are informed, has created some confusion in our readers' minds.

THE LANCET.

LONDON: SATURDAY, MAY 24, 1924.

THE APPEAL IN THE HARNETT CASE.

The judgment in the appeal by Dr. C. H. Bond and Dr. G. H. Adam against the judgment entered by Mr. Justice Lush in the action brought against them by Mr. R. S. Harnett will have been welcomed by members of the medical profession with a sense of relief, and read by few with any surprise. The judgment, which was given by the Lords Justice Bankes, Warrington, and Scrutton, allowed the appeal of Dr. Adam against whom £20,000 damages were awarded jointly with Dr. Bond, and ordered judgment to be entered for him. Against Dr. Bond in addition to the joint damages, were awarded £5000, and their lordships ordered a new trial in his case, Dr. Bond to have the costs of the appeal, the costs of the first trial, while following the ultimate issue, to be limited to such as would have been incurred if the original claim had been against Dr. Bond alone, and only for the period between the plaintiff's alleged detention at the Commissioners' office and his return to Dr. Adam's care (see p. 1072). The new trial is conditional upon Mr. Harnett repaying the money already paid under the order of the Court below.

The result of the verdict and judgment in the Court below in the case of both defendants was contrary to the conclusions at which the ordinary citizen would have been able to arrive after the perusal of the evidence given in court, and it must have been felt by all that error had occurred in the administration and application of the law at a trial in which, no doubt, great sympathy was excited in the minds of the jury in favour of the plaintiff—for admittedly he had had bitter experiences. The generally important feature of the case, and the one which occupied the most prominent place in the judgment of the Court of Appeal, was the decision arrived at by the jury that Dr. Bond and Dr. Adam should be held jointly liable to pay £20,000 as damages to Mr. Harnett, in respect of his detention in a succession of mental homes from a date in December, 1912, to October, 1921. The alleged liability of Dr. Bond in this respect arose from his having detained Mr. Harnett at the offices of the Commissioners of Lunacy for a certain number of hours, thus bringing about the return of Mr. Harnett to the care of Dr. Adam at Malling Place. Admission on Dr. Bond's behalf that this action had no legal support under any provision for the care of the insane has rendered it necessary that there should be a fresh trial to determine the proper extent of Dr. Bond's liability, and this matter will be subject to the observations of the Court of Appeal as to the remoteness of the damage for which compensation had been awarded. When judgment was given for £20,000, it had been held by Mr. Justice Lush that the whole of the detention of Mr. Harnett over a period of nine years might be attributed to the action of Dr. Bond in causing the revocation of Mr. Harnett's leave of absence on probation from Malling Place, or else to the joint action of Dr. Bond and Dr. Adam in the same matter. No subsequent removal to any other place of treatment, no subsequent certification or other duty definitely imposed by the legislature, and performed by any doctor or official visitor up to almost the end of 1921, constituted a *novus casus interveniens* to break the chain of causation, and to relieve Dr. Bond and Dr. Adam from the consequences of what the jury found to be a wrong view entertained by them as to Mr. Harnett's mental condition on Dec. 14th, 1912. It may be suggested that to find Dr. Bond and Dr. Adam responsible for the whole of the nine years' detention of Mr. Harnett was to place both of them, but more particularly the former, in the position of a judge who sentences a prisoner to a term of penal servitude, and to allot to the medical officers of the mental institutions in which Mr. Harnett was afterwards confined, to the Commissioners and to their visitors no higher functions or powers than those of governors of prisons and visiting justices whose duty it is to keep convicts in custody and to see that they are properly treated. The jury at the trial were not asked to say what Dr. Bond's position would have been if, honestly believing that Mr. Harnett was not fit to be at large, he had sent him away, and if, through his happening to be in a worse mental condition than, in fact, he was on that afternoon in December, he had inflicted on others, or himself had suffered, some physical injury. As matters stand Dr. Bond has to face a fresh trial, knowing that a limit has been placed by the Court of Appeal to the liability arising out of his action. In the circumstances no further comment upon Dr. Bond's case is permissible. Dr. Adam, on the other hand, is to be congratulated warmly upon having obtained from the Court of Appeal a judgment which completely exonerates him from responsibility for such error as the jury attributed to him. The law relieves from liability in express terms a medical man who carries out duties such as his, using reasonable care in their performance. The jury found that when Dr. Adam sent a car to fetch Mr. Harnett back from Whitehall, he honestly believed that his late patient was not fit to be at large, but that in acting as he did he did not use reasonable care. It was urged at the trial that Dr. Adam ought to have gone personally to fetch his patient, but the Court of Appeal brushed this point aside as magnifying the importance of an insignificant detail.

The result of the judgment should be that medical men charged with the duty of treating the insane, or of sending them to be treated, if they comply in spirit and letter with the law regulating such matters, will be able to act with such confidence as they possessed prior to the trial before Mr. Justice Lush reached its unfortunate conclusion. They may and should be encouraged by a significant passage quoted by Lord Justice Bankes as coming from that wise and learned judge, Lord Lindley, who said in the course of a judgment dealing with the Lunacy Act of his day, that it had "given to justices of the peace and medical men wide powers, based upon the theory that they could be trusted."

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PYORRHŒA ALVEOLARIS.

The problem of dental sepsis is of importance alike to dentist and doctor, for since the work of Dr. William Hunter, the view that it is a common cause of general disease has taken a definite place in medicine. Now that the radiogram has revealed the frequent existence of apical rarefaction in pulpless teeth these lesions have somewhat overshadowed the significance of pyorrhœa as a cause of dental sepsis, and by implication, a cause of constitutional symptoms. Pathologically there does not seem to be any justification for this view. Clinical evidence would suggest that all forms of dental sepsis are a potential source of danger, though the fact that in many individuals gross dental sepsis may coexist with excellent health, suggests that the pathology of various dental lesions is imperfectly understood. From the standpoint of the dentist, pyorrhœa and dental caries are the two chief agencies concerned in the destruction of the teeth, and the treatment of the former disease plays a large part in every dental practice. A series of articles on pyorrhœa, which appears in the *Dental Surgeon* of May 10th, affords an opportunity of reviewing the present state of our knowledge of this disease. This knowledge is meagre. The host of theories put forward to account for the causation of pyorrhœa, and the different methods of treatment in vogue are a sufficient index of our ignorance. It is not definitely settled whether pyorrhœa is a local condition, or whether it is a local manifestation of some general disturbance. In this country many dentists hold the view that it is a local lesion, in accord with the views put forward with so much cogency by Mr. J. G. TURNER.[1] But Mr. F. W. BRODERICK, who holds equally strongly that a faulty metabolism is an essential factor in the disease, would find not a few to agree with him in a view which, in the present state of our knowledge, is somewhat speculative and lacks the simplicity of the theory of local origin. Yet this simplicity may be only apparent and even misleading. It would be unwise to rest content with such an ætiology without exploring thoroughly the possibility of a constitutional element. Much has been heard lately in America of "traumatic occlusion" as an ætiological factor in pyorrhœa. It is thought by some that when teeth are in faulty occlusion the stress of mastication sets up an irritation of the periodontal membrane which permits subsequent inflammatory changes. A recent announcement in the lay press, couched in glowing terms, stated that Dr. HAROLD BOX, of Toronto, had made a discovery of great importance. It would appear that this observer has investigated the patho-histology of the disease and believes that it may be explained by this conception of traumatic occlusion. The announcement was unauthorised, and criticism must await publication in a professional journal.

The bacteriology of pyorrhœa alveolaris is still obscure. An excellent review of the subject was given last year by Prof. E. GLYNN in a lecture under the auspices of the Dental Board and since published. Although GLYNN considers that streptococci are the chief pathogenic organisms in periodontal infections, he points out that evidence of specificity is lacking. Their invariable presence fulfils one of KOCH'S postulates—they can be cultivated, but these streptococci do not produce the disease experimentally in healthy animals. KRITCHEVSKY and SEGUIN believe on even less conclusive evidence that spirochætes are the causal organisms. BASS and JOHNS'S theory of *Entamœba buccalis* as the cause of pyorrhœa may now be dismissed; there can be no doubt that DOBELL is right in regarding this organism as a harmless commensal of the mouth. With so much unknown about the ætiology and pathology of pyorrhœa, it would be too much to expect unanimity of treatment. Different methods abound and are constantly increasing in number. Each has its enthusiastic adherents and for a time appears to possess magic properties. Each in turn drops out of sight. Clinical experience shows that there is no royal road to the cure of dental sepsis. Neither drugs nor ionic medication nor vaccine-therapy can replace careful instrumentation and mechanical cleansing of the teeth, though they may have ancillary value. Unless the patient is prepared to coöperate loyally in carrying out a definite régime of home treatment, the best efforts of the dentist are of little permanent avail. Much confusion has resulted from the different standards of "cure" adopted by various dentists. The essential lesion in pyorrhœa is a progressive destruction of gum, bone, and periodontal membrane. This leads to the formation of a pocket round the tooth which becomes an ideal receptacle for bacteria and putrefactive debris. A discharge of pus is often present, but is not an invariable feature, as the name of the disease would imply, neither can it be assumed that the presence or absence of pus is a trustworthy index to the gravity of the condition. There is no evidence to show that once the attachment of the periodontal membrane is destroyed it can ever be replaced. Thus conservative treatment may result in arrest of the disease and of its symptoms; there can never be a *restitutio ad integrum*. Conservative treatment, too, has its limitations. A pocket so deep that it cannot be obliterated or kept clean by the combined efforts of dentist and patient is a menace to oral and general health. Extraction then is the safest course. The days when the end and aim of the dentist was to conserve teeth at all costs have happily passed, to be replaced by a standard more consonant with surgical principles.

Vaccine-therapy forms an interesting chapter in the treatment of pyorrhœa. The latest development is to inject the vaccine locally into the gums. This method, introduced by GOLDENBURG, is based on BESREDKA'S assertion that in vaccine-therapy it is necessary for the vaccine to follow the path of the infection for which the treatment is given. FIELDEN BRIGGS, who has recently described[2] the technique, states that two cases under his care were cured. Much depends, however, on the meaning attached to the word "cure." Furthermore, a considerable time must elapse in order to show how far any improvement is maintained. Mr. ARTHUR BULLEID, in a careful paper in the *Dental Surgeon* dealing with the applications of immuno-therapy to dentistry, states emphatically that the vaccines must be autogenous. He divides dental sepsis into two classes: those in which there are no constitutional symptoms, and those in which the dental lesions are definitely associated with such symptoms. He considers that vaccine treatment is specially indicated in the second class, though he holds that in conjunction with local treatment they are often useful in the first group. Time alone must show whether the local injection of vaccines into the diseased tissues offers any advantage over their injection subcutaneously into a neutral area. Indeed, the whole question of vaccine-therapy in pyorrhœa is in a confused state. As BULLEID fairly points out, so long as no causal organism is isolated, vaccine treatment remains empirical, its value being determined by clinical experience. Since it is always associated with local treatment, it is difficult to distinguish the rôle played by the vaccine from that of the local treatment. There is much diversity of opinion among dentists. Some, like BULLEID, consider that vaccine-therapy, used carefully and with regard to bacteriological findings, will do undoubted good in some cases. Others of long experience, after having tested the results of treatment with and without vaccines, have come to the opinion that vaccine treatment is without appreciable influence on the course of the disease. Some who do not agree that the local symptoms are affected by vaccines think they may aid in curing the constitutional symptoms where present. It is evident that our knowledge of pyorrhœa on all points is far from final, for there is a wide divergency of view on the ætiology, pathology, bacteriology, and treatment of the disease. Yet the pessimism which might seem to follow on such a confession is not justified. We agree with Mr. Bayford Underwood, writing in the same issue of the *Dental Surgeon*, that though progress is slow it is definitely advancing. The dentist can even do something to prevent the disease from occurring in many cases by seeing that his intervention, both remedial and prophylactic, is directed to the prevention of food stagnation. The maintenance of nasal respiration is of great importance, for it is an undoubted fact that a healthy mouth cannot exist if mouth-breathing is present. In early cases much can be done by careful treatment, but to be effective the patient must coöperate wholeheartedly with the efforts of the dentist. Provided that intervention comes early before the disease is too far advanced, it is possible to arrest its progress and to ensure a functional mouth. The active and concerted research into dental disease which is now being carried out by the Medical Research Council in coöperation with the Dental Board should hasten the solution of some of these problems.

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[1] Diseases of Periodontal Tissues due to Infection in their Relation to Toxæmia. 1923. Dental Board of U.K., Hallam-st.,W.

[2] Brit. Med. Jour., Feb. 23rd, 1924.

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NEW FACTS IN THE ÆTIOLOGY AND TREATMENT OF MALARIA.

The recent researches of Prof. Warrington Yorke and Dr. J. W. Scott Macfie, reported to the Royal Society of Tropical Medicine and abstracted in The Lancet last week, not only fill in many gaps in our knowledge of malaria, but also furnish first-hand information for the guidance of the alienist inclined to test this remarkable new method in the treatment of general paralysis. Most of the work was performed with the benign tertian parasite (*Plasmodium vivax*), which, undoubtedly, is most suited for injection; the quartan was soon discarded on account of its extraordinarily prolonged incubation period, which may last as long as 54 days, while injection of the subtertian parasite (*P. falciparum*) produced in the solitary case in which it was tried a fulminating and fatal attack.

With regard to the natural history of malaria, so many new facts emerge that it is difficult at the present moment to appraise them all. The unicity theory of the origin of malaria, so tenaciously propounded by Laveran, has received its death-blow. There are three species of malarial parasites which invariably reproduce themselves on inoculation and remain true to type. Then, again, we learn that, contrary to expectation, the repeated subinoculation of malarial blood from man to man through more than 20 passages in no way alters the virulence or virility of the parasites, nor does the diseasse thus produced differ in any remarkable degree from that acquired by the bite of infected anopheline mosquitoes. In the treatment of this therapeutic malaria by quinine there is much cause for reflection, for the authors found, in accordance with previous workers, that inoculated malaria proved to be extraordinarily susceptible to the action of quinine—30 gr. a day for three consecutive days being found sufficient to sterilise the patient of his infection. This rapid action is forcibly contrasted with the experience of Prof. J. W. W. Stephens and his colleagues upon malarial infections contracted during the war. On the other hand, the alleged prophylactic effect of quinine receives a severe blow from which it can hardly recover, for we learn that from abundant experiments the administration of this drug before the bite of an infected mosquito is quite useless, and that its administration must be continued for at least ten days after the infecting feed to prevent the disease from developing. In other words, it is evident that quinine is entirely innocuous to the sporozoites, and the conclusion is reached that the drug exerts its maximum action upon the young trophozoites in the blood-stream, and it is, therefore, most effective in primary infections. The mechanism by which a cure is produced is ascribed to production by the host of immune bodies in response to the antigen formation resulting from the destruction of a considerable number of parasites.

However important the facts related above may be to the tropical worker, possibly of even greater interest to the practitioner in this country is the impartial statement upon the value of the malarial treatment in general paralysis. Of 84 paretics, who have been observed for a sufficient length of time, 27·4 per cent. have been discharged as provisionally cured, while an additional 20·2 per cent. show distinct mental and great physical improvement. The exact mechanism by which this desirable result is obtained by the malarial parasite is not at present by any means clear. If it is effected by a series of regularly repeated protein shocks we are left at a loss to understand how the cerebral sclerosis and the degeneration of the nervous tissue can be permanently affected. All who were privileged to listen to this paper will endorse the congratulation offered by Lieut.-Colonel S. P. James, of the Ministry of Health, upon an important piece of research. The Liverpool School of Tropical Medicine has always maintained a reputation for accurate and conscientious scientific work, and this reputation has been fully maintained, if not augmented, by these remarkable and suggestive investigations, as well as by the lucid manner of their exposition.

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HOSPITAL COÖRDINATION IN BIRMINGHAM.

As in other cities, hospital work in Birmingham has somewhat suffered from the multiplicity of institutions. Besides the two large general hospitals, the General and the Queen's with their special departments, there are numerous smaller hospitals serving special interests and making independent appeals for support. The two larger hospitals are connected with the medical school, but the clinical material at the other hospitals with some exceptions is not available for teaching students. For some time there has been a movement towards greater coöperation between the various hospitals. At the recent annual meeting of the Birmingham and Midland Hospital for Diseases of the Nervous System, the most recently founded special hospital, it was reported that a working arrangement had been made with the Queen's Hospital. Each hospital will retain its separate identity and management, but all appointments to the staff of the Nerve Hospital will be made by the Queen's Hospital and the whole of the medical work will be conducted by members of the staff of the Queen's Hospital. This will be a great advantage to both institutions, and the patients at the Nerve Hospital will be available for clinical instruction. An arrangement has also been made between the General and Maternity Hospitals. Heretofore both hospitals have had an external midwifery department, but in future the midwifery department of the General Hospital will be transferred to the Maternity Hospital, the hon. obstetric and hon. assistant obstetric officers at the former becoming members of the staff of the latter hospital. This scheme will prevent much overlapping and will help to reduce the economic burden. Important extensions at several of the hospitals are being discussed, and it is possible that other working arrangements will be entered into in the future. From many points of view it would seem to be an advantage for special hospitals to be closely associated as regards their medical work, but not necessarily as regards their management, with a large general hospital.

Annotations.

"Ne quid nimis."

THE FIRST DENTAL BOARD.

THE Dental Board of the United Kingdom was reminded by its chairman, Mr. Francis Dyke Acland, in his opening address on May 13th, that it was the sixth session and the final sitting of the First Dental Board. He thought that any impartial observer would agree that the past two and a half years of work had been carried through in an earnest and liberal spirit and in friendly coöperation. He could wish that the harmony and coöperation in the profession were as complete as it had always been in the Board. As a commentary on the opinion which he had heard expressed, that practically all persons who previously lived by the practice of dentistry had succeeded in becoming registered, Mr. Acland pointed out that, whereas between 12,000 and 13,000 forms were issued to applicants and nearly 11,000 applications were made, the actual number of dentists 1921 on the Register at the present time was approximately 7736. Probably a few mistakes had been made, but there was no doubt that those who were not justified in obtaining admission to the Register are finding it difficult to maintain their position upon it, and are tending to drop out. He congratulated the Board upon the fact that, although many of the cases submitted had required anxious thought, only two appeals had been entered against their decisions. During the first year of its work the Board had to take proceedings in a large number of cases with regard to "covering"; the fact that no complaints had been received under this heading for some time indicated the practical cessation of this practice.

The year 1923, Mr. Acland went on, was largely occupied in working out schemes for assisting in dental education aand research, although a beginning was made in the previous year, and of giving grants to ex-Service students who were not able to complete their courses by the assistance which they had received from the Government. Courses of lectures were arranged in the spring of 1923, and again this year, dealing with the higher branches of dental science, which had been very generally successful. Loans to students unable to complete their course without financial assistance have been made, and have been undoubtedly useful. The position of dental schools as regards accommodation and facilities for dental training was carefully examined, and, as a result, the sum of £16,000 has been earmarked to assist them. Good relations were established both with the Medical Research Council and the Department of Scientific and Industrial Research, and careful and thorough schemes of research are now proceeding, both on the scientific and on the practical sides of dental work. Towards the end of the year two new educational activities were developed, first by courses of lectures and instruction to new entrants to the Register, which were reported to be well attended and much appreciated; and, secondly, by a scheme of granting bursaries to students of slender means to assist them in taking a full dental course.

As regards prosecutions, proceedings were taken and pressed in 39 cases, convictions secured in every one of them, and fines and costs amounting to £272 and £58 respectively were imposed. The difficult question of arrangements between coöperative societies and dentists was approaching solution, owing to goodwill and common sense on both sides. The Board is now justified, Mr. Acland thinks, in assuming that all practitioners have had a full opportunity of realising the principles to be followed with regard to advertising and canvassing, and in dealing with cases which come before it on this assumption. Steps are being taken for an active campaign through the chief constables to put a stop to unregistered practice. Proceedings have been taken against unregistered persons treating pyorrhœa by prescribing a mouth-wash after examination of patients' mouths. The practice was held to be "giving such advice and treatment as are usually given by dentists," and fines of £100 were imposed.

In conclusion, Mr. Acland gave an estimate of probable future income and expenditure, in order that the Board and Parliament might be in a position to judge whether it would be justifiable to reduce the annual retention fee of £5 which is now charged.

"On the income side," he said, "we may estimate to receive about £45,000 a year, which I do not think will vary very much or very rapidly for some considerable time. I hope that the numbers entering the profession each year may slowly increase, but I think that any increase in this direction may be balanced by the fact that more advanced ages are probably unduly represented on the present Register, and that a good many now on it may find it difficult to maintain their position. Against the £45,000 income, I set first of all the sum of £12,000 to cover our standing charges, such as fees and travelling expenses of members of the Board, printing, salaries and wages, office expenses and legal expenses. The next item is £12,500 for educational and research work other than bursaries, and contingencies in connexion with such work. This is made up as follows:—

Research	£6000
Grants to dental schools	£3000
Propaganda as to the benefits of proper dental treatment	£1000
Post-graduation and Post-registration lectures and classes, and publications on professional dental subjects	£1500
Contingencies to cover inspection of examinations and the holding of prescribed examinations, &c.	£1000

"The two main sums make a total of £24,500, and leave a balance of £20,500 for bursaries. I estimate that a bursar may cost £130 a year, and therefore £20,500 will maintain about 160, or an entry of 40 a year for a four years' course. Before the war, an entry of rather over 250 students maintained a practising list of about 5000. On these figures the present Register of 13,500 will need an annual entry of 700 if it is to be maintained, and a considerably larger number if the practising list is to be raised to 16,000, which is the calculation on the basis of one to every three thousand of the population. The present entry, following upon a very heavy post-war rush, is, as we know, only a small one, but this will no doubt steadily expand. If the figure of only 600 entrants a year be regarded as within practical politics during the period which I am considering, it is clear that if but 40 students a year are helped, the percentage that this bears to the whole number is only between 6 and 7 per cent. I do not think that anyone can suppose that the number of young men and women who would make in every way competent dentists, but who cannot afford without help to enter the profession, will bear this low proportion of the whole number desiring to enter it. I, therefore, cannot regard the sum of, roughly, £20,000 a year for bursaries as being in any way excessive. If the fee were reduced by even £1 a year this amount would be approximately halved, and only 20 students a year could be assisted. Taking these circumstances into account, I am strongly of opinion that there is no sufficient justification for a reduction of the present retention fee. Dentists now on the Register will realise that, although they would have an almost inappreciable annual amount to gain by a reduction of fee, they would have later on very much more to lose if an agitation were to arise, owing to an insufficiency of fully qualified dentists, for the lowering of the standard of the qualification or the setting up of an inferior standard."

The remainder of the session was occupied with the consideration of penal cases.

FORENSIC PROBLEMS OF LETHARGIC ENCEPHALITIS.

THE Danish neurologist, Dr. August Wimmer,[1] has drawn attention to some of the very troublesome medico-legal problems to which lethargic encephalitis has given rise. With increasing knowledge of this disease it is becoming abundantly clear that its acute early stage is but the beginning of much worse things; it is the chronic sequel, the smouldering disease of the central nervous system, which is most to be dreaded. While psychic changes are comparatively rare in adults after an attack of lethargic encephalitis, adolescents and children seem very prone to develop moral and psychic faults which make them a nuisance and even a terror to their surroundings.

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[1] Hospitalstidende, 1924, lxvii., 177.

In the experience of Dr. K. Winther, as many as 12 out of 25 children suffering from lethargic encephalitis developed more or less gross psychic disturbances. They may, in many cases, be fugitive and difficult to classify, and the boundary-line between the healthy and the morbid mind being often difficult to draw, the physician is hard put to it to know what to do with these patients. They may be too sane for an asylum, but not sane enough to remain at home. In ordinary hospitals they have no place, and considering how numerous these cases are, it may prove necessary to establish special institutions for them. Meanwhile, these patients travel from pillar to post, disturbing the peace, falling foul of the police, and being subjected to psychiatric examination and observation with little result and benefit so long as a more or less permanent resting place is not available for them. Dr. Wimmer illustrates the difficulties associated with such cases by an account of a patient aged 14. In August, 1920, he developed fever, drowsiness, delirium, ptosis, diplopia, and paresis of the right facial nerve. A month later signs of mental deterioration appeared. He was foul-mouthed and quarrelsome, spitting like a lama, and coaxing nurses to him only to strike them in the face or attempt improper approaches. A neurological examination was remarkably negative; his intelligence seemed to be unimpaired, and when he was discharged from hospital at the end of October, 1920, he seemed to have regained his normal mentality. He was readmitted to hospital in April, 1922, because of choreiform disturbances and erotic propensities. Systematic tests of his intelligence showed no gross defects, and he was discharged from hospital. In May, 1923, he again drifted into hospital, this time on the initiative of the civil authorities with whom he had come into conflict on account of assaults on young girls. He admitted that these assaults, or attempted assaults, were the outcome of momentary impulses, but a neurological examination showed nothing definitely abnormal. Cases such as this are so common that the problem of dealing adequately with them is most serious: to deprive such persons completely of their liberty seems hardly justifiable, yet to leave them uncontrolled is to invite tragedies such as that of Vera Hoad. Till we know more of post-encephalitic psychopathy and its prognosis, we run grave risks of being unjust to the patient, the community, or both.

THE SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS.

IN an address, delivered before the Welsh National Memorial Association to which he is consulting surgeon, and published this week in our columns, Mr. H. Morriston Davies outlines the indications for operative treatment in pulmonary tuberculosis. For 10 or 12 years he has himself been performing various thoracoplastic operations, but only recently has he been able to get such work organised on a proper basis. Nevertheless, surgical methods should be available for rich and poor alike, and Mr. Davies contends that if surgical methods were generally adopted in sanatoria it would imply a large increase in staff and equipment. The results in his experience are brilliant. Of cases in which a complete pneumothorax could be induced, over 70 per cent. became fit to return to work and more than 50 per cent. of of his thoracoplastic patients were freed from their symptoms. Apart from other indications the artificial pneumothorax justifies itself by relieving a patient from the fear of a return of serious hæmoptysis. Surgical methods have had more vogue abroad and, thanks to the initiative and skill of Prof. F. Sauerbruch, the University Surgical Hospital of Munich has for many years been the leading centre for plastic operations on the lungs. A monograph[1] recently published by his assistant, Dr. Alfred Brunner, is an instructive summary of the advances made during 1918–22 in this promising branch of surgery. Important information has been gained during these years with regard to the technique of the operation and the avoidance of the many false steps, any one of which may convert success into disaster. As a considerable number of cases have now been operated on at Munich, and these cases have been carefully classified, it is already possible to define clearly the indications and contra-indications for thoracoplasty, and it is probable that many of the patients operated on a few years ago by Prof. Sauerbruch would, in the light of his more recent experience, have been considered unsuitable for this most exacting operation. Dr. Brunner's classification of the 117 cases, operated on in the period under review, brings this point out very clearly. In his first group there were 35 cases in which the disease was almost entirely unilateral, afebrile, and fibrotic; it had lasted for years and had shown a definite tendency to heal by fibrosis and retraction. In this group he had to record only three unsatisfactory results. Of the remaining 32 patients, six were improved, another 12 were rid of their tubercle bacilli, and 14 were cured. It would be no exaggeration to describe these results as brilliant. His second group included 43 cases whose characteristic features were a sub-febrile temperature, suspicious signs of activity in the opposite side, and other phenomena suggesting that there was an exudative element in the disease. In this second group he had to record two early and four late deaths, and five other cases in which the disease became worse or remained stationary. There were 14 cases showing improvement, 12 became sputum-negative, and six could be regarded as cured. It will thus be seen that 32 of the 43 patients benefited from their thoracoplasties. Far worse results were obtained among the 39 patients belonging to the third group, the distinctive features of which were rapid progress of the disease, a high temperature, and, in most cases, great general debility. None of these 39 patients was cured, and only 11 derived any benefit from the operation. This hastened the fatal issue in many cases, 21 of the patients dying within a year of the operation, and 10 of them in immediate connexion with the operation. Another lesson of Dr. Brunner's monograph is that this operation requires great practice and dexterity if it is to achieve the best results it is capable of; the duration of the operation is a most important factor, and the leisurely-fingered surgeon would do well to leave it alone.

HOSPITAL BEDS FOR CHILDREN IN SOUTH LONDON.

CHILDREN'S hospitals play a very important part in the health of the metropolis, yet the accommodation for this section of the community is most meagre. On the south side of the river there is actually only one cot for 12,560 head of the population, as compared with one cot for 3523 per head on the north side; and this difference is steadily increasing owing to migration of the occupants of demolished small tenements. Moreover, the population is poorer on the south side than on the north side. The annual report of the Belgrave Hospital for Children (Clapham-road, S.W.) for the year 1923, which has just been issued, clearly shows that of 1496 patients admitted to the wards during that year, some 600 came from Lambeth, about half that number from Wandsworth and Camberwell respectively, smaller numbers from Southwark, Battersea, and the remaining South London boroughs, while only 16 came from North London and 32 from places beyond. This means that 96 per cent. of the total beds in the hospital served the needs of South London and 86 per cent. the needs of the five boroughs in the centre of which the hospital stands, an indication of local usefulness which is something of a record. The total ordinary income of the hospital for 1923 was £9809 as compared with £8831 in the previous year, and the total ordinary expenditure was £9840 and £10,251 for these two years respectively, showing a drop of £411 for the year with which the report deals. The evidence of careful husbandry is grateful, but it is lamentable that economy should have to be so strictly enjoined. The medical report gives the percentage mortality of the 1496 patients in 1923 as 6·21 per cent., and of the 1152 patients in 1922 as 8·1 per cent. Of six patients operated on for congenital pyloric stenosis all but one recovered. The report should be studied and its lessons taken to heart by all those who control purse-strings on the right bank of the river which industry has rendered so unlovely.

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[1] Die chirurgische Behandlung der Lungentuberkulose. Tuberkulose-Bibliothek. Leipzig: J. Ambrosius Barth. 1924. With 99 illustrations. Pp. 375.

EFFECT OF PATHOLOGICAL SERA ON PLAIN MUSCLE.

It is well known that serum contains a substance which increases the tone and augments the rhythmical movements of surviving plain muscle—e.g., in the arterial and intestinal muscles. In the current number of the *Quarterly Journal of Experimental Physiology* Dr. Lena C. Adam records observations made on intestinal muscle only. The tissue used was a slip of longitudinal muscle from the lowest 2 inches of cat ileum, either fresh or on the second day, after being kept in the ice-chest; the animals were killed by chloroform or coal-gas. It was found that normal human serum contains a substance which causes a constant rise in tone when applied to plain muscle. The augmentor substance occurs in serum, citrated blood, citrated plasma, laked washed red cells, and fresh uncoagulated blood. A similar rise in tone was obtained with serum from cases of diabetes, scarlet fever, diphtheria (convalescent), pernicious anæmia, syphilis, and some cases of nephritis, malignant disease, and afebrile tuberculosis. An increased effect was obtained with serum from exophthalmic goitre, febrile tuberculosis, six out of eight cases of malignant disease, six out of nine cases of nephritis, and one case of influenza. A less marked rise of tone occurred with serum from one case of myxœdema, and was increased up to normal after thyroid feeding. It would be of great interest if, as the outcome of these observations, some factor could be found common to pathological states of which the sera has an effect greater than normal.

THE CASSEL HOSPITAL FOR FUNCTIONAL NERVOUS DISORDERS.

The methods of treatment in use at the Cassel Hospital for Functional Nervous Disorders, Swaylands, Penshurst, are familiar to those acquainted with an excellent manual[1] published by its medical director last year. We know that Dr. T. A. Ross is not committed to any one method or to any one school; that different methods are used for different cases, but that in the great majority of cases psycho-analysis of any kind is avoided. The second annual report, whose issue we recorded last week, affords the first real opportunity of estimating the results obtainable by the "common-sense" means of treatment which he has advocated. They are most encouraging. Among the 113 patients in the largest of the classified groups—the psycho-neurotics—of 97 individuals who have sent replies from 6 to 20 months after their discharge, 75 are better and 29 state that they are absolutely well; 18 report that they are no better, and the remaining four are better but do not attribute their improvement to their treatment at the Cassel Hospital. The criterion of improvement is whether they are "fitter to face the world or not"—surely the most practical touchstone of all. The director in this report has nothing new to say on treatment, but he emphasises the fact that practically all psycho-neurotics are aware in some measure of the experiences in which their disease has had its origin, and adds: "History-taking in minute detail appears . . . to be infinitely more fruitful than the process which is usually called psycho-analysis." It is not denied that free association methods will sometimes discover these lost memories when history-taking has failed; but the year's work has tended to increase Dr. Ross's belief that the vast majority of the complexes so discovered are of no value in treatment. He is convinced further, from observation on several patients, that certain of the stereotyped complexes, such as the Œdipus complex, are not arrived at spontaneously by the patient; and a little care in questioning patients who have been analysed elsewhere has convinced him that many analysts impose Freud's views on their patients, and that there is not a great deal of true analysis being done. Another interesting point in the report is that patients with gross hysterical disability have been treated by "the method of direct persuasion after the history had been taken and the position explained." Dr. Ross deprecates the use of all physical aids, such as electricity. The number of his cases in 1922 was only seven, but six of them were completely cured and none had relapsed. Of the cases of psychosis, only 26 were considered suitable for treatment; 11 improved greatly while in the hospital and in nine the improvement has been maintained; of the two who relapsed one has again recovered and the other is again under treatment. The report states that at least six of these 11 patients would sooner or later have required treatment in a mental hospital if they had not been under treatment at Swaylands. The principle is consistently maintained at this hospital of refusing to express any conclusion as to whether a patient has or has not benefited from his stay there until at least six months after discharge; consequently the report deals with those patients who were treated in the hospital during the year 1922, from whom accounts have been received during 1923—182 individuals in all. There is ample evidence that the hospital is doing good work, and that it is fulfilling the purpose of its founder by aiding a type of patient whom it is almost impossible to improve in a general hospital.

A CANADIAN SYMPOSIUM ON CANCER.

The last issue to reach us of the *Canadian Practitioner* (Vol. XLIX., No. 3) is a special "Cancer Number." There are in all 17 original articles by American, British, Canadian, and French authors, and the subjects range over the whole field of causation, prevention, and treatment of the disease. A general review of these articles is given in an editorial, and we think there will be wide endorsement of the commendation of the article entitled "The Influence of Radiation Therapy on the Study of Cancer," by Prof. James Ewing, of Cornell. This article will be read with pleasure and interest by many others than radiologists, for Prof. Ewing emphasises the fact that the radiation therapy of cancer has elicited many peculiarities in tumours demanding further study from biologists and physiologists. He briefly reviews the reaction phenomena which are a sequel to the irradiation of human tumours, and divides them into various categories. The first are the embryonal tumours which have a high degree of radio-sensibility; in these radiation may cause disappearance of the tumour without appreciable damage to the normal tissues of the host. The second are the cellular carcinomas, derived from adult cells which are not so radiosensitive and, while the primary results of radiotherapy in these cases are often brilliant, few complete cures are obtained. The majority of malignant tumours are, however, not so radiosensitive that the desired result can be brought about without some damage to the normal structures; in these a definite caustic action cannot be avoided. Occasionally the radiologist has to be content with slowing up or holding in check the malignant growth; Prof. Ewing is careful to point out, however, that this is, in many cases, a by no means negligible thing, for such treatment may in time transform a malignant tumour into a quiescent and comparatively innocuous process. The whole number is deserving of study, and if we cannot completely subscribe to the view expressed by the editor that "the causes of cancer are to a large extent known," and still less to the view that "cancer can be prevented in a large proportion of cases, including cancer of the stomach"—we can well believe that time will achieve this unity of opinion.

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[1] The Common Neuroses; their Treatment by Psychotherapy. By T. A. Ross, M.D., F.R.C.P. Edin. 1923. London: Edward Arnold. 12*s.* 6*d.*

CRIMINAL RESPONSIBILITY OF THE INSANE.

Mr. Donald Carswell's summary of proposed changes in the law of criminal responsibility of the insane, delivered and discussed at a meeting of the Section of Psychiatry of the Royal Society of Medicine, is given in another column. It forms a valuable commentary on Lord Darling's unsuccessful attempt (outlined under Parliamentary Intelligence, see p. 1084) to obtain legislative recognition for the defence of uncontrollable impulse. In asking the House of Lords to give a second reading to his Criminal Responsibility (Trials) Bill, Lord Darling modestly spoke of himself as the franc-tireur whose sniping brings on a pitched battle. Certainly the heavy artillery was brought to bear on the sniper. The weight of high judicial opinion proved hostile. Lords Sumner, Cave, Haldane, and Dunedin spoke against the proposal. The Lord Chief Justice stated that, out of 12 King's Bench judges whom he had consulted, 10 were opposed to it, one was in favour of it, and one was doubtful. In the circumstances Lord Darling could do nothing but withdraw his Bill. The main line of attack was the danger of the defence of uncontrollable impulse being set up in many serious charges, especially in crimes due to anger, vengeance, or sexual passion. There is evidently a judicial fear that the conduct of trials will be handed over to the medical profession, who will argue insanity from the nature of the offence. There is also a fear of weakening the citizen's power of resisting temptation. "Who is to decide," asked Mr. Justice Avory in charging the Leeds Grand Jury the other day, "whether an impulse was uncontrollable or merely not controlled? The law is there to teach people to control these impulses." Lord Darling's Bill was, in part, merely declaratory. He had some ground for contending that the defence of uncontrollable impulse is already recognised in English law. Sir James Stephen thought and taught so; Lord Denman said so in Oxford's case as long ago as 1840; the late Mr. Justice Bray declared so in Fryer's case in 1915; and Mr. Justice McCardie advised the jury so in the case of Ronald True. There are doubtless plenty of judicial decisions and opinions to the contrary, but it is a pity that the law does not make up its mind one way or the other. In favour of Lord Darling's statement of the principle one might further cite the established practice of the courts of Italy and of Germany and of South Africa and Queensland. Finally, there is the strong opinion of Lord Justice Atkin's committee of last year. That committee recommended that it should be recognised that an accused person "is irresponsible for his act when the act is committed under an impulse which the prisoner was by mental disease in substance deprived of any power to resist." Who were the rash and thoughtless committeemen who recommended what the recent speakers in the House of Lords denounced as such a difficult and dangerous doctrine? Two of them, Sir Edward Troup and Sir Ernley Blackwell, were the highest possible authorities on the administration of the criminal law as seen from the Home Office side. Four of them, Sir Edward Marshall-Hall, Sir Herbert Stephen, Sir Richard Muir, and Sir Archibald Bodkin, were men whose names guarantee that all possible points of view, whether of prosecution or defence, were well known and fully considered. Apart from the learned chairman, the three remaining members were all ex-law officers of the Crown, Sir Ernest Pollock (now Master of the Rolls), Sir Leslie Scott, and Sir Thomas Inskip, all experienced in conducting and advising upon important criminal trials. The committee was of exceptional legal and administrative strength. Is it likely that their recommendations would be too difficult to work or too dangerous to execute? Neither the report of Lord Atkin's committee nor the proposals in Lord Darling's Bill could be described as entirely satisfactory to the medical profession, but they were a step in the right direction.

Lawyers and judges would probably admit that their views are not scientific. Their attitude is one of confidence in administration and distrust of fine shades or progressive principles. "How," they ask, "are we to define insanity? Trust the wisdom of our judges, trust the common sense of our juries, trust our expert administrators at the Home Office, and all will be well." The anomalies of the law were well illustrated by the second clause of Lord Darling's Bill. As has been pointed out in these columns before,[1] the Trial of Lunatics Act of 1883 encourages a verdict of "Guilty but insane." Now to be guilty involves crime, and to commit a crime involves having what the law calls a *mens rea*, whereas to be insane involves the absence of a sense of right and wrong. The absurd verdict of "Guilty but insane" means little more than "Guilty but innocent." Lord Darling proposed to substitute "Not guilty because insane," but this proposal has fallen with the rest of the Bill.

ISOLATION OF LEPERS.

The campaign recently initiated at the Mansion House for the care and treatment of leprosy throughout the British Commonwealth has naturally led to an increased interest in the existence of cases of leprosy at home. Emphasis has been laid on the method of segregation to limit the opportunities of infection, and so to combat the further spread of leprosy, and the question has very naturally been asked as to whether the lepers resident in this country should not again be segregated, as they were when the first leper-house was established at Nottingham in the year 625 A.D. Paris has recently woken to the possible danger of the spread of the disease in that city, to which at least 200 lepers have drifted from foreign countries, and Prof. Jeanselme has asked the Permanent Leprosy Commission to study anew the prophylactic measures desirable to prevent the spread of the disease in France. It is admitted that the method of infection in leprosy is practically unknown—hitherto it has proved impossible to infect animals—while the classical example of Father Damien, who wilfully and wittingly succumbed to the disease after 16 years' sojourn with lepers on one of the smaller Sandwich Islands, is still fresh in the popular imagination. In the United States of America a Bill was presented to Congress in 1905 with the aim of setting up a national leprosarium, although nothing came of it at the time. One of the Eastern States has its leper asylum in Boston Harbour. We think that anxiety in this country would be at once allayed by a cold study of fact. Although leprosy is not here a notifiable disease, yet successive Ministers of Health have given assurance in the House of Commons that the approximate number of cases of leprosy in this country is known, the total not reaching three figures. Since 1914 a number of cases have been isolated at St. Giles's Homes in Essex, which can accommodate six patients at a time; here local anxiety is giving place to a feeling of pride in possessing a benevolent instrument. In all these cases, wherever opportunity has offered of complete investigation, the source of infection could be definitely traced to previous sojourn outside the country. There is scarcely any evidence of leprosy having been acquired in Great Britain during a century or more; the last authentic case of endemic leprosy died in the Shetland Islands in 1798. The two or three cases in which home infection was presumed 40 or 50 years ago were instances of prolonged and intimate contact which is quite excluded by present-day conditions. Hence, from the public health point of view, there would be no justification in segregating such cases as we have amongst us. The disease itself is sufficiently distressing without adding thereto the ferocious measures of the Middle Ages, when segregation led to a morbid fear of chance contacts. The Ministry of Health has recently had occasion to investigate an instance in which one of the nurses trained at St. Giles's Homes has undertaken, on her own initiative and expense, to furnish an asylum for some of these unfortunate persons, and to provide them with access to the most modern medical treatment. It is, we admit, uncongenial to many people to live within sight of their less fortunate comrades, whether they be morally, mentally, or physically afflicted. We can with good conscience assure them that there is no hygienic or public ground for anxiety or interference, though it would hardly be denied that at some places—for example, health resorts—the presence of a home for lepers might damage local interests. Where this is not so interference with a deed of mercy would be deplorable. It is only the very rich or the very heartless who can elude the reminder of such inequalities in our present social life.

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[1] The Lancet, 1923, i., 705.

NEW METHODS AT BUXTON.

The formal reopening by the President of the Royal College of Physicians of London of a remodelled installation of hot baths at Buxton is an event of no little importance in British hydrology. It cannot be denied that, under new methods of investigation, the spas of all countries are being classified afresh, and true progress consists in the well-considered development of the special indications for each water. It is not always easy to define these *differentiæ*. Recent researches carried out by spa practitioners in the mineral waters hospitals, in which we are glad to see that Buxton is bearing an honourable part, have been recorded in the *Archives of Medical Hydrology*. They reveal unexpected actions and differences between springs. The Committee for the Study of Medical Hydrology in Great Britain has, during the past year, arranged lectures at the University of London and at various medical schools. These have been set up in the hope of familiarising medical men with the practice of hydrology in Britain and other countries, and also of instructing senior students in the principles upon which this practice is founded. It can hardly be doubted that even a few men, qualified by serious study, could do much to advance both the science and practice of hydrology in any country. Such opportunities for special training seem especially desirable, and even necessary, in England, if the British spas and the modes of treatment which they offer are to be looked upon, in Sir Humphry Rolleston's words, as a national asset. To utilise such resources in the proper manner is, we think, both a medical and public question, and ought no longer to be left to unassisted efforts of individuals, or even of enlightened public authorities.

THE COMING VOLUNTARY HOSPITALS CONFERENCE.

The best method of completing the investigation into hospital accommodation will be the principal subject of discussion at the Conference of Local Voluntary Hospital Committees, which is to be held on June 18th. In order to focus the points for discussion at this Conference, the Voluntary Hospitals Commission has asked the local committees to obtain from each hospital in their area particulars of beds, length of stay, and waiting lists. The local committees are also asked to furnish reports on the following points:—

1. It is not an uncommon practice for patients awaiting hospital treatment to put down their names on the waiting lists of two or more hospitals. The difficulty, therefore, in computing the number of persons awaiting hospital treatment is the elimination of duplicate entries. The local committees should indicate whether there is any reason to suppose that such duplication exists, and if they are able to obtain exact figures after eliminating duplicate entries, these should be included in their reports.

2. The views of the committees on the extent of the need of further beds in terms of the several classes of beds specified in the questionnaire. (The Commission would particularly wish to know the views of the committees on the question of how far the need in their areas should be met by the provision of hospital beds or alternatively by the provision of more recovery or convalescent beds.)

3. The observations of the committees on the prospects of the hospitals succeeding in carrying out any scheme they may have in view for providing further beds and for maintaining them. In this connexion the Commission would be glad to know whether the committees have formed any opinion as to any alternative method of providing additional beds in their area.

4. What convalescent accommodation there is available for the inhabitants of the area, apart from beds controlled by the hospitals.

5. Whether there is any arrangement for utilising vacant Poor-law infirmary accommodation to supplement the voluntary hospital accommodation in their area.

6. The observations of the committee regarding any vacant beds there may be in the hospitals in their area, particularly as to how far vacant beds could be utilised —e.g., by a system of transfer of patients.

7. Whether the committees have conferred with the medical officers of health in their area, and what views the latter may have expressed on the question of hospital accommodation.

Local committees are also asked to make any suggestions as to how far the difficulties created by shortage of accommodation could be met by means of coöperation with areas adjoining their own.

RADIOGRAPHY OF THE PYLORUS.

The interpretation of pyloric radiography tends to become more precise. Herrnheiser[1] in discussing X ray appearances of the pylorus and the pyloric antrum in the diagnosis of ulcers in these situations, draws attention to four morphological changes that occur in these conditions before any actual stenosis becomes manifest—viz., the pyloric or pre-pyloric niche, the contraction and reaction of the pyloric canal, and the formation of diverticula. The pyloric or prepyloric niche is situated usually on the lesser curvature, and varies in size up to about ½ cm. It is a sign of a simple ulcer, though malignancy cannot be absolutely excluded. If present, it is very strong evidence of an ulcer in the pyloric region. Contraction as opposed to actual defect, and analogous to hour-glass contraction of the body of the stomach, is of more frequent occurrence than the already mentioned sign, and is usually found along the greater curvature about ½–2 cm. from the pylorus. It remains unaltered in size, has clear-cut edges, and its depth may reach 1 cm. or more. In a new growth a somewhat similar appearance occurs, but the edges are diffuse and irregular. Retraction includes a flattening or elongation of the pyloric antrum or canal, and occurs practically always on the lesser curvature; whilst the greater curvature is full and rounded, the canal itself may be excentric or, if the flattening occurs all round, assumes a conical shape and is frequently twice its normal length. The condition may be associated with simple ulceration of the duodenum with or without pyloric adhesions, less frequently with new growth, rarely with a chronic appendicitis. Formation of diverticula occur typically on the greater curvature between the pyloric canal and a contraction area from simple ulceration, and is frequently present in the pre-stenotic stage of the pylorus. Actual pouching from ulceration rarely occurs in the pyloric canal, and is differentiated from a niche by its being along the anterior aspect of the organ. In a malignant ulcer the outline is irregular and indistinct, and there are other obvious changes in the contour of the viscus. The article gives an indication of the direction taken by clinical teaching of German radiologists.

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[1] Med. Klinik, May 4th, 1924.

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LXXII.

THE TREATMENT OF BILHARZIA DISEASE.

THIS article deals with the cure of the individual affected by bilharzia disease. It is not possible to deal here with measures advocated for the eradication of the disease. However, the cure of a parasitic disease—if a genuine cure there be—is vastly the greatest part of "prevention," particularly in this case, for antimony not only kills the parasite but sterilises the seeds (ova) which spread the disease. According to the latest Egyptian Government (1923) statistics, it is estimated that of the 6,000,000 people who are infected with bilharzia in that country *over* 5,000,000 can be cured by antimony injections alone.

Bilharzia disease (schistosomiasis) is prevalent throughout Africa, some localities of China are heavily infected (Asiatic species), also one island of Japan, the Philippines, and Formosa; it is endemic in the West Indies and some parts of South America. The disease consists in the invasion of the liver by a fluke whose habitat is the portal vein. The parasites descend to the bladder and rectum by the portal tributaries to deposit ova, which thereby reach the exterior world. Intravenous injection is therefore the rational method of directly attacking the worm. Antimony tartrate is an effective cure [1] for all forms of human schistosomiasis (bilharzia). Both potass. ant. tartrate and sod. ant. tartrate are employed, soluble colourless salts, readily sterilised by boiling; they keep well in the tropics. Neither is too "toxic" for intravenous injection. Readily procurable, stable, and inexpensive, they are suitable for the mass treatment of a widespread disease. The sodium salt is less toxic, more soluble, and quite as efficient as the potassium salt.

Antimony tartrate has two distinct actions in schistosomiasis. It kills the ova deposited in the tissues by the worm and afterwards it kills the parasite. The former is the more important action, for the ova spread the disease. It is necessary to investigate the physical condition of the patient before commencing the injections. Bilharzia disease too far advanced, a feeble constitution from whatever cause, and serious cardiac and renal disease contra-indicate this treatment. A few individuals cannot tolerate antimony. These are only discovered by trial. In children and stout people veins are not easily accessible and some skill is needed to inject such cases. Children may be given antimony tartrate per rectum, but this method is of doubtful value; the large single doses which are given (gr. xv.–gr. xx.) make one suspect that little is absorbed. Emetine may be regarded as an alternative to antimony tartrate when the latter cannot be given. It is given by intravenous injections, 1½ gr. repeated 15 or 20 times in a month and a half or two months. It is inferior in efficiency to antimony tartrate and its use, in the necessary large doses, is liable to be followed by cardiac weakness and peripheral neuritis. In the tropics the fæces should be examined for the presence of other helminths previous to commencing injections. If found these should be dealt with first.

The Technique Used.

Two and a half hours after a light meal and two hours before the next, when the stomach is neither distended with food nor exhausted by hunger, is the best time for the injections, which are given on alternate days or three times a week. The commencing dose for an adult is ½ gr. (for children under 10 ¼ gr.). The dose is increased by ½ gr. at each injection till 2 gr. (or 2½ g.) has been reached. The full dose is given, unless contra-indicated, at each succeeding injection. Ampoules containing the various single doses used are made. They are comparatively expensive and are only suitable for private practice. In other cases dispensing errors are avoided by using tablets containing respectively 1 gr. and 10 gr. of antimony tartrate with the appropriate sodium chloride to make a physiological solution. They are made up conveniently and inexpensively by well-known chemists. These can be readily dissolved and boiled in a test-tube in water before the injection. Antimony tartrate can be boiled over and over again provided the water lost in boiling is replaced. The 10 gr. tablets dissolved in 40 c.cm. of distilled water (when procurable) make the solution: 2 c.cm. contain ½ gr., 10 c.cm. contain 2½ gr., and intermediate quantities in proportion. This standardisation is convenient; it is not too concentrated for the veins, and 10 c.cm. contain the maximum single dose. The 10 c.cm. record syringe is generally used.

Needles.—The needle is an important item, iridium platinum (23 mm. by 6 mm.) with short point are the best. For the negro skin, which necessitates a strong needle, stainless steel (24 mm. by 6 mm.) are used by the missionary doctors in Central Africa. Whatever the make, the needle should be moderately fine, sharp, and free from rust, and not more than 1 in. in length. All the apparatus used should be sterilised, the room suitable for an aseptic operation, the light good, and the patient lying down. In certain Egyptian hospitals the injections are made with the patient sitting, 300–400 injections being given in a morning; this fact indicates the infrequency of untoward incidents attending injections in Egypt. Acetone, ether, or alcohol is used to sterilise the skin. Iodine obscures the vein and is apt to make the site unfitted for subsequent injections. The veins at the bend of the elbow are the most convenient, but any prominent vein in the extremities, the external jugular in children, may be used. A tourniquet is not necessary with a clever assistant to compress the vein; team-work is the key to successful intravenous injections.

The needle *must* be introduced into the lumen of the vein. Cellulitis invariably follows if the solution is injected around the vein. A week or a fortnight in bed and much pain is the result; large fomentations are necessary and not too early incision. A regurgitation of blood into the syringe on withdrawal of the piston is the infallible signal. It is equally important that the needle shall not slip out of the vein during the operation. Beyond the pain experienced by the puncture intravenous injection is a painless operation. If pain is experienced it is wise to assume that the needle-point is not in the vein, but pain *may* be due to too rapid injection or to the solution being too concentrated; slower injection is then the remedy. The careful injector does no material damage to the vein wall provided he uses a sharp clean needle. The same vein may be used at the same spot for the 10 or 12 injections necessary for the course. After the operation the patient should remain lying down for half an hour, when, if he feels all right and his pulse is normal, he may walk home quietly, have a cup of tea, and rest for the remainder of the day; light food may be taken in two hours' time. A local blush is often seen during the injection, and the face and neck may become temporarily flushed. Before the injection is completed a painful, dry cough usually occurs, indicating that the antimony has reached the pulmonary circulation. A metallic taste, a dryness of the mouth, a feeling of constriction in the throat, a tightness of the chest, and later colicky pain in the abdomen are variable incidental phenomena which do not always occur. They are useful signals. If they are severe the dose should not be increased at the next injection; it may be advisable to reduce it. The occurrence of giddiness, headache, sickness, and diarrhœa, call for judgment in graduating the next dose.

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[1] Prior to 1918 there was no known specific cure for bilharzia, though it is true that in 1916 emetine was being used by Greek doctors in Cairo. Urotropin, ext. of filix mas, boric acid, salol, hyoscyamus, and buchu were the drugs recommended; treatment was palliative and symptomatic, and bed and surgery gave the best results. Surgical complications, tumours and ulcers caused by the deposition of ova, sepsis, calculus, and new growth are still dealt with by appropriate surgery, but it is the practice now to eradicate the active bilharzia infection (parasite and ova) by a course of antimony injections before adopting surgical measures.

Rheumatic Pains.—A very constant symptom occurring during the night following the fourth or fifth injection is "rheumatic" pains in the joints or muscles, commonly the shoulders, caused by the antimony interfering with the metabolism of the liver and thereby allowing into the blood toxic bodies produced by imperfect physiological elaboration. The constant presence in the urine of oxalic acid crystals in excess is noteworthy in this connexion. These pains may be distressing though temporary, and if severe may require a reduction in the succeeding dose.

The first visible effect of the injections on the urine is an increased hæmaturia; later in uncomplicated cases the blood vanishes, the urine becomes normal in appearance, and the native patient, thinking himself cured, is apt not to return for completion of treatment. Punctually on the ninth day the ova in the urine, very much reduced in quantity, become granular. Gradually the live ova (those with outlines of embryonic structures) disappear. After 20 gr. have been given the urine is practically normal. The ova, appearing only at intervals, are granular and dead. Generally speaking, the necessary dose to ensure that both worms and ova are killed is 25–30 gr. for the *adult*.

Four methods for ascertaining whether sufficient antimony has been given have been recommended. None is of precise value: (1) Fairley's complement-fixation test; (2) the eosinophilia differential count; (3) Carlos Franças ovimetric method; (4) the microscopic appearance of ova in the urine. With regard to (1), it is not often possible to procure the necessary antigen, and the "reaction" is positive for some time after the cure. (2) is valueless because eosinophilia is not pathognomonic of bilharzia. (3) is based on the assumption that the female worm responds to the antimony by laying gradually smaller ova, and by measuring the ova the effect of the antimony on the worms can be determined. It also postulates that the antimony-sick-worm lays granular eggs. (4) is satisfactory within limits. The microscope, however, does not disclose the condition of the parent worm. Experience is thus at present the only sure guide in determining the necessary total dosage. Occasionally worms appear to resist even 30 gr. In such cases, suspend injections at 30 gr. and give a second course after an interval. In complicated cases the course of antimony should be given and the complications dealt with afterwards by appropriate medical and surgical measures.

Physiological Action and Tolerance. Idiosyncrasy.

Individuals vary greatly in toleration of antimony. "Coloured races" tolerate it well. Serious intolerance is not common in England, but it occurs more frequently than in Egypt or the Sudan. The initial cough, tightness of the chest, metallic taste in mouth, nausea, sickness, diarrhœa indicate care in graduating the dosage. Moderate intolerance may be overcome by careful slow gradation of dosage, but a patient who has shown marked symptoms of intolerance becomes intolerant to smaller doses. A serious form of "intolerance" appears as "shock," which may occur only after a few doses have been given. Hot-water bottles, blankets, rubbing the extremities are indicated, a diffusible stimulant—two teaspoonfuls of brandy in hot water should be given by the mouth, $\frac{1}{2}$ c.cm. of a 1/1000 adrenalin solution diluted, $\frac{1}{2}$ c.cm. of a 20 per cent. extract of post-pituitary gland solution may be given intramuscularly. Digitalin, 1/50 gr., is useful to stimulate the heart's action. It is wise to be alert but not over-anxious on such occasions. When the condition of the patient has improved, a small cup of strong coffee, after being put to bed, is useful. Antimony tartrate used with caution and circumspection may then safely be employed for the eradication of bilharzia. But if this useful drug is employed empirically or in a commercial spirit it is bound to fall again into disrepute.

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Medicine and the Law.

HARNETT *v.* BOND AND ADAM: JUDGMENT OF THE COURT OF APPEAL.

CONSIDERED judgments in this case were delivered by Lords Justices Bankes, Warrington, and Scrutton on May 16th. A summary of the arguments submitted to their lordships will be found in THE LANCET of April 26th, pp. 870–872. The results of the judgments now delivered are that in the case of Dr. Bond the judgment of Mr. Justice Lush for £20,000 against him and Dr. Adam jointly, is set aside, but so far as it related to Dr. Bond, a new trial is ordered to be confined to the liability of Dr. Bond in respect of the alleged detention of the plaintiff at the offices of the Commissioners in Lunacy and of the period which ended when Dr. Adam had decided after the plaintiff's return to Malling Place that he should be detained there under the original reception order. As to this, Lord Justice Warrington said that there was no evidence on which the jury could arrive at the conclusion that Dr. Bond acted otherwise than in the belief that he was acting in Mr. Harnett's interest. This presumably is intended as an intimation that, according to his lordship's view of the evidence, the action of Dr. Bond was not more than technically an infringement of the plaintiff's liberty. In the case of Dr. Adam, verdict and the judgment of Mr. Justice Lush are set aside and judgment entered for this defendant with costs of the trial and of the appeal. Dr. Bond is to have the costs of his appeal, and with regard to costs to be granted at the new trial ordered a special order was made by the Court of Appeal as to the costs of the first trial, limiting the costs to be recovered under this heading by the plaintiff (if the plaintiff should succeed in the second trial) to such as would have been incurred if the claim in the first trial had been against Dr. Bond alone and in respect of the period above indicated for which alone Dr. Bond is to be deemed liable. This limitation of the costs of the first trial to be granted in the event of the result of the second trial being adverse to Dr. Bond was imposed by the Court of Appeal because, as stated by Lord Justice Bankes, the costs of the first trial had been "greatly increased by the form and extent of the plaintiff's claim against Dr. Bond."

Lord Justice Bankes, before summarising the facts of the case and in commenting upon its importance to the medical profession and to the public, pointed out that Mr. Justice Lush had decided that a person who in the view of a jury had acted without sufficient care, with the result that another person was detained under the Lunacy Laws as being of unsound mind, could be held liable and mulcted in damages, because a third person, whose duty it was to have the patient discharged if sane, did not do so, and this although the person, who continued to detain the patient, acted in good faith and in the honest discharge of what he conceived to be his duty. With regard to the detention by Dr. Bond, his lordship referred to that defendant and his secretary as agreed that when Mr. Harnett called at the offices of the Commissioners he was manifestly unfit to take care of himself or to be allowed out any longer on probation. After describing the manner in which evidence covering the whole of the subsequent period of detention had been introduced at the trial, Lord Justice Bankes said that the long-drawn-out story of the plaintiff's detention had enabled counsel to appeal to the sympathies of the jury, and to produce an atmosphere in which the sufferings of the plaintiff monopolised attention.

As to the condition of the plaintiff's mind on Dec. 14th, 1912, the jury had found him to have been sane, but no question had been put to them as to his sanity with regard to the subsequent period from December, 1912, to October, 1921, and it was difficult to see how, without any finding in the plaintiff's favour as to that period, damages could have been awarded him in respect of it. However, the jury must have considered him sane during that period. There had been no argument on behalf of the defendants before the Court of Appeal to the effect that the verdict as to the plaintiff's sanity on Dec. 14th, 1912, was against the weight of evidence, so no opinion would be expressed as to that.

Turning to the main question affecting Dr. Bond, whether his liability, if any, for the plaintiff's detention extended to the whole period from the time when the plaintiff was taken back to Malling Place up to his escape from a different institution in 1921, his lordship pointed out that this was a vital point. He read extracts from the summing up and judgment of Mr. Justice Lush, who had refused to accept the argument that any subsequent proceeding in connexion with Mr. Harnett's detention had constituted a *novus actus interveniens* breaking the chain of causation. Mr. Justice Lush had referred to the certification of Mr. Harnett in November, 1913, as "mere machinery" for avoiding the necessity of a new reception order; and had drawn a distinction between an act of omission (omitting to recognise the plaintiff's sanity) and an act of commission, the latter alone being capable of being interpreted as *novus actus interveniens*. Lord Justice Bankes declined to draw any such distinction in the plaintiff's case, or to find that the proceedings necessitated by the Lunacy Acts were not acts of commission. He could not look on the serious act of certification as mere machinery and found the chain of causation broken in many places. He could not hold that the jury could take into consideration the whole period of the plaintiff's detention in assessing damages. If his lordship's view as to this was right the verdict and judgment against the two defendants as joint tortfeasors must be set aside.

Proceeding further to discuss the question of the damages awarded, Lord Justice Bankes was of opinion that they were based upon misapprehension of the defendants' liability and that the attempt made at the trial to apportion them must consequently fail. He proceeded to refer to the Lunacy Acts of 1890 and 1891 and to the scheme of legislation embodied in them. Lord Lindley in Regina *v.* Whitfeld (15 Q.B.D., 122, at p. 150) had described the powers granted by the Lunatic Asylum Acts of 1853 to justices of the peace and medical men as due to the theory that they could be trusted; this was equally true of the later Acts. The reception order justified Dr. Adam in receiving and detaining the plaintiff whom he might have recaptured under it if he had escaped. His lordship described the processes by which a reception order is continued in force under Section 7 of the Act of 1891 by successive special medical reports to be made by the medical officer of the institution in which the patient is detained. He quoted Lord Denman (In re Shuttleworth, 9 Q.B., 657, p. 658) as saying that double protection had to be afforded against improper confinement on the one hand, and on the other against danger from a lunatic being unrestrained.

With regard to the question whether the liability of Dr. Bond should extend beyond the sending for the patient at his request by Dr. Adam, his lordship looked upon the Lunacy Acts as conferring on the medical man in charge of a patient a daily and hourly duty of satisfying himself of the patient's need to be confined; and in his opinion every decision come to by a medical man, by a Commissioner, by a visitor, or a member of a visiting committee of itself amounted to a *novus actus interveniens*. With regard to the view that these decisions in Mr. Harnett's case had merely been the omission to detect his sanity, his lordship suggested the comparison of a wrong diagnosis of a case of scarlet fever as measles. That would be to make a wrong diagnosis, and would rightly be so described, but according to the point of view adopted it might equally be said to be the omission to make a right diagnosis. In any case the defendant, Dr. Bond, could not be held responsible for the opinions formed by Dr. Adam after the plaintiff had passed back into his hands.

With regard to Dr. Adam, his lordship carefully examined the effect of the reception order and of the probation order granting leave of absence, and declined to treat the latter as giving complete liberty for a full period of 28 days. It was an intimation by the medical officer, sanctioned by two visitors and consented to by the person who applied for the reception order, that the powers under the order would cease to be exercised by the medical officer unless it became necessary that they should be. He could not interpret the words "take back" in the probation order as merely equal to "receive back." He was further of opinion that Dr. Adam was protected by Section 330 of the Act of 1890 if he had acted with reasonable care. He could see no evidence of want of care on the part of Dr. Adam, and the fact that he had not personally gone to fetch the plaintiff back was an example of a comparatively unimportant point to which undue weight had been assigned at the trial. The judgment against Dr. Adam must be set aside and judgment entered for him with costs.

The case of Dr. Bond was on a different footing. Liability on his part had been admitted, but the damages had been wrongly assessed. Judgment was therefore given for a new trial in the case of Dr. Bond, the judgment given by Mr. Justice Lush being set aside, and the scope of the new trial granted being laid down as stated above.

Lord Justice Warrington, in giving judgment to the same effect, said that as liability for the plaintiff's detention had been admitted on behalf of Dr. Bond, so far as he was concerned the question was whether the damages were excessive. Dr. Adam in taking the plaintiff back had acted on the authority of the statute, the reception order, and the probation order, and was not liable to proceedings if he had acted in good faith. The assessment of the damages was wrong. The detention of the plaintiff after he left Malling Place was directly caused by the action of the various medical officers, Commissioners, and visitors who had the necessary power to release or to detain him according to his mental condition. Dr. Bond neither controlled these persons nor Dr. Adam, all of whom could have released the plaintiff. As to the £5000 damages allocated in respect of the detention at the Commissioners' offices, the sum, in his opinion, was excessive. Some of the jury's answers amounted to a serious imputation on Dr. Bond, and there was no evidence to justify them.

Lord Justice Scrutton spoke of the danger of confusing the issues raised at the trial which was not a Royal Commission to inquire into the working of the Lunacy Laws as applied to Mr. Harnett's case. If it had been so it might be suggested that the judicial inquiry preceding the reception order might be more precise in its procedure if the alleged insane person were informed of the charges against him and given the opportunity to answer them. His lordship referred in detail to some of the acts alleged against Mr. Harnett, and pointed out that for eight or nine years visitors and medical men independent of Dr. Bond had examined him. The liability of each defendant ceased when the detention was continued by the legal act of a person appointed to continue or, if he thought proper, to stop it. Dr. Bond had no power to detain the plaintiff and acted illegally in doing so, but his responsibility ended when that of Dr. Adam began, and as to Dr. Adam there was no evidence that he had not acted with reasonable care. In the case of Mr. Harnett the judge and jury no doubt desired to compensate him for wrongs they believed him to have suffered, but a careful examination of the legal position was called for, and the Court must not be turned aside by appeals suggesting that the Lunacy Acts might in a particular case bear hardly upon an individual or upon the community.

The order made by the Court of Appeal as to costs is referred to above. It was further ordered that the sum of £5000, ordered by Mr. Justice Lush to be paid to Mr. Harnett, must be repaid, as a condition of the order for a new trial. An application for costs from Dr. Adam on the higher scale was not acceded to. An intimation was given that the question of an appeal on behalf of Mr. Harnett to the House of Lords would have to be considered by his advisers.

Special Articles.

THE SURGICAL TREATMENT OF CANCER OF THE BREAST.

THIRD MEMORANDUM OF DEPARTMENTAL COMMITTEE OF MINISTRY OF HEALTH.

THE third[1] of the series of reviews summarising the position of modern knowledge and practice in regard to different aspects of cancer, now being issued by the Departmental Committee on Cancer of the Ministry of Health, relates to cancer of the breast and the results of surgical operation in connexion with this condition. One of the first undertakings of the Committee was to arrange an exhaustive study of existing surgical literature, home and foreign, which bears on this subject. This considerable task, which has involved the analysis of records of upwards of 20,000 cases, has been undertaken for the Committee by Dr. Janet Lane-Claypon. The presentment of this analysis requires some little time, but meanwhile some important conclusions to be deduced from it already stand out clearly, and have confirmed the Committee in their belief that public advantage will be gained by the issue of the present memorandum.

Facts which should be Recognised.

The memorandum reviews the general position at which surgery has arrived in the case of this form of cancer, and states certain facts which the public should recognise if operative treatment is to yield the success which in favourable circumstances and under modern conditions it is capable of yielding.

The first section deals with immediate operation mortality past and present, and with the duration of convalescence. It is stated that deaths directly attributable to the operation, if performed by skilful surgeons and in well-equipped institutions, have been reduced in breast operations to a fraction of 1 per cent. At the present time even more extensive operations heal, as a rule, without any suppuration and the patient is out of bed in about a fortnight.

In the second section on the natural course of cancer of the breast, the well-known symptoms—age incidence and course of the disease—are set out. There is reason to believe that the upper and outer quarter is the commonest situation in which cancer appears, while the nipple is the rarest, the other portions occupying intermediate positions in this respect. The matter is important because the severity of the disease bears a relation to the portion of the breast affected. The fact that in its early stages cancer is usually unattended by pain is again emphasised.

For many reasons the natural duration of cancer of the breast is difficult to state with precision. Thus (1) the onset frequently cannot be fixed with any degree of accuracy; (2) amongst cases of cancer, even in women of the same age and of the same habit of body, some run an acute, others a chronic, course; and (3) the age at which the patient becomes affected appears to exert an important influence upon the natural course of the disease: cancer takes, on the whole, a more rapid course in the young person than in the old. If cancer of the breast supervenes during pregnancy or lactation the course of the disease may be abnormally rapid. While subject to these variations, the average natural duration of a case of cancer of the breast appears to be a little over three years.

The close relation between cancer and antecedent chronic inflammatory disease of the breast is discussed in the third section; this relation, coupled with the fact that a non-malignant tumour of the breast may remain so for a long period of years and ultimately pass into undoubted cancer, must have a bearing on the advisability or otherwise of operation in diseased conditions of the breast other than cancer.

On treatment of cancer of the breast, which is the subject next dealt with, it is stated as being beyond question that, at the present time, early surgical operation affords the one chance for a patient suffering from cancer of the breast. Cases of cancer treated only with internal medicines, or external applications, or by dietetic methods are not being effectually treated. This does not mean that such agents as radium and X-rays cannot be usefully employed as aids to surgery, or in cases in which surgical operation is impossible. Unfortunately, with improvement in surgical technique there has been no corresponding increase in the proportion of cases which reach the surgeon at a stage of the disease when such treatment offers the greatest advantage, and this fact has to be remembered in assessing the results of surgical treatment. As to varieties of operation, it is indubitable that the better results obtained at the present time by operation in cancer of the breast mainly depend upon the completeness with which the outlying portions of the cancer are removed. It is satisfactory to note that the modern "complete" operation does not add in any significant degree to the risk of the operation itself, nor to subsequent disability, so far as the patient is concerned. A modern extension of the operation lies in the addition of such advantages as are afforded by radium and X rays, to the "complete operation." The object of this radiation treatment subsequent to operation is to deal with microscopical foci of living cancer cells that may lie beyond the limits of the operation, so as to prevent their development.

Results of Operation.

The most important point of all, from the patient's aspect, is the measure of the success of surgical treatment, and this is very difficult to assess. The *average* duration of life in patients whose disease has followed a natural course is estimated at little more than three years. No precisely comparable figure for patients who have been operated upon can be given owing to the difficulty of keeping in touch with them for perhaps 10, 15, or more years after operation. A majority of surgeons have been obliged to content themselves with reporting the percentages of their patients who have survived three years from the date of operation.

The aggregate results, based on the experience of many surgeons in different countries, are as follows:—When the old and now generally superseded incomplete operation was performed, about 25 per cent. of the patients were known to be alive at the end of three years after operation. When the more complete operation of modern times was performed, twice as many, some 50 per cent., survived three years, and 33 per cent. survived five years after operation. These statistics, however, relate to patients who at the time of operation were in various stages of the disease, some in a condition such that, although the surgeon could be reasonably sure that operation would afford relief, and *might* eradicate the disease altogether, he could have little confidence that the disease would not recur. On the other hand, statistics exist of the results when the disease at the time the patient came to the surgeon appeared to be in an early stage and limited to the breast only. In this early condition it is *certain* that 60 per cent., and highly probable that 75 per cent., of the patients were alive and well three years after operation. Indeed, some experienced surgeons have thought that the percentage of cured patients might, in these circumstances, be stated to reach 75 per cent.

Prolongation of Life.

Upon the basis of all these statistics it is possible to reach an average figure of the duration of life after operation which can be set against the average of some three and a half years in the unoperated cases, but this can only be done by means of assumptions, to state which would require a technical and detailed account unsuited to this memorandum. It may, however, be stated that, even under the unsatisfactory conditions imposed by the late stage at which many cases come under surgical observation, which gravely lowers the average success recorded in the massed statistics, the mean duration of life is prolonged several years. In the special circumstances of operation at the most favourable—that is, the earliest—moment after recognition of a lump in the breast, there is an average prolongation of life amounting to *many* years. The Committee have advisedly refrained from adopting the word "cure" and have only spoken of the prolongation of life. It is, however, certain that cure, in the widest popular sense of the word, has frequently been effected by *early* operation—i.e., that patients have lived 10, 15, 20, or more years and died ultimately of some other disease. The surgeon cannot promise this, however early the operation, but he is entitled to assert that in a great majority of cases life will be considerably prolonged and in a still greater majority rendered more acceptable, freer from pain, and more capable of active enjoyment. On the other hand, the after-history of patients not operated upon, or operated upon when the disease has spread beyond its first point of attack, can be foretold with equal certainty and is a sad one: it will not often exceed three or four years. The teaching of surgical statistics is, then, that the results of early and complete operation justify not a certain, but a highly favourable, prognosis.

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[1] Cancer.—iii. Circular 496. Ministry of Health, 1924. H.M. Stationery Office. 1*d.* The two preceding pamphlets were dealt with in THE LANCET, 1923, ii., 479; and 1924, i., 770.

A Demand for Local Inquiries.

The considerations set out in the memorandum suggest that local inquiries may be useful to ascertain the extent to which, in a given area, cancer of the breast is now being allowed to continue to a fatal termination without appropriate surgical treatment. It is suggested that local authorities, in conjunction with local representative bodies of the medical profession in suitable areas, might periodically undertake a review of such questions as this as well as of the facilities given locally (1) for clinical consultations and for pathological examinations, and (2) for the treatment, especially operative treatment, of cases of cancer.

IMPERIAL SOCIAL HYGIENE CONGRESS AT WEMBLEY, MAY 12TH–16TH.

(*Concluded from p. 1024.*)

THE proceedings of this congress, the first day of which was reported in our columns last week, demonstrated the many-sidedness of the problem and the existence of a large body of men and women, lay and medical, keenly interested in its solution. Important papers were read on a number of more or less closely related topics. It may be useful to summarise here some of the points in the control of venereal diseases on which there appear to be general agreement and also those which give rise to controversy.

Education.

Agreement was general that much more needs to be done to educate the public as to the serious ravages of these diseases, that cure is a means of prevention, that early treatment is essential to cure, and that the attainment of a higher moral standard and the avoidance of promiscuous sexual intercourse should be put in the forefront. Education of the young and adolescents in sex hygiene, it was pointed out, should be founded on the teaching of self-control, beginning in infancy, and on education in biology and good citizenship from the elementary school period onwards. Sir Frederick Mott's interesting paper showed how necessary it is for elders to understand and allow for the varying effects of the critical period of puberty on the adolescent of either sex. In some quarters it was contended that health authorities are not sufficiently interested, owing to the fact that they have been, as it were, "contracted out" of the schemes, and have not that direct interest in the suppression of this section of infectious diseases, which is, perhaps, more important than any other to the health of the community. The old idea that venereal diseases are a just punishment for immorality is evidently not dead, in spite of the well-known fact that a large proportion of the sufferers acquire the disease innocently, and it was stated that some institutions still regard these patients as pariahs. Evidently the truth that, in these diseases particularly, adequate treatment is a measure of prevention of first-class importance, must be insisted upon day in and day out. The obvious corollary is that, in order to get the sick treated, every facility and a sympathetic reception must be provided at all clinics and institutions engaged in the work.

Efficiency of the V.D. Clinics.

It was made evident by the papers and discussion on May 14th that the clinics at present fail to secure the attendance of a large proportion of those who need treatment, and that of those who do attend a considerable proportion default. Sir George Newman suggested that the amount of default is exaggerated by the high standard of cure adopted, and that in many cases those not returned as cured have been, no doubt, rendered permanently non-infective or greatly relieved. On the other hand, Mr. David Lees, of Edinburgh, and Colonel L. W. Harrison (Ministry of Health) were of opinion that the clinics with the highest standard of cure showed the smallest proportion of defaulters. Mr. Lees considered that one of the main factors in reducing the failure to continue treatment at the Edinburgh clinic from 40 per cent. four years ago to the present low figure of 14½ per cent. had been the discouragement of self-treatment. Patients who are instructed to treat themselves are apt to cease attending. All patients at the Edinburgh clinic are required to attend weekly or fortnightly, and treatment is, as far as possible, administered at the clinic. Colonel Harrison emphasised the great advantage of clinics open all day (say from 8 A.M. till 10 P.M.) over clinics open only at stated hours, and compared the results of one all-and-every-day clinic with a percentage of "ceased attendance" of 12·3 for syphilis and 14·6 for gonorrhœa, with the results of a clinic open at restricted hours with a percentage of "ceased attendance" of 33·2 for syphilis and 32·4 for gonorrhœa. Colonel Harrison also insisted upon the need for setting aside time for the systematic and thorough examination of the cases of chronic gonorrhœa. If this were not done, and the treatment of such cases became merely routine, the patients would lose hope and cease to attend. There was general agreement that the tact and sympathy of the medical officer was a most powerful factor in reducing default to a minimum. Dr. F. N. Kay Menzies would like to have the 28 London centres reduced in number to six or eight thoroughly efficient all-day clinics. It is quite clear that a large number of the clinics do not approach the high standard laid down by Colonel Harrison and Dr. Lees, and that apart from the question of patients ceasing to attend before cure is completed, a large number of cases do not come up for treatment at all. More cases of gonorrhœa attend than formerly, but a very large proportion of female gonorrhœa goes untreated. Very little syphilis of parturient women is treated. Hostels are needed to ensure the successful treatment of single girls who are in domestic service or other employment. Special sessions are needed for married women and children, although the all-day clinic minimises the objections to the herding together of all types of patients in the common waiting-room. The looking-up of contacts and infecting cases is a difficult matter. Colonel Harrison pointed out how much could be done in this respect by tactful almoners, and would like to see an almoner attached to each clinic. Miss Frances Brown (supervisor of the Venereal Disease Nursing Department of Public Health, Toronto, Canada) showed that in Canada each V.D. clinic receiving a Government grant is required to employ a public health nurse, and that on this nurse devolve the duties of (1) securing the regular attendance of patients; (2) securing the examination of other members of the family; and (3) instructing the family as to home treatment. It was evident from the papers and discussion that little has as yet been done in this country in the way of searching out contacts and securing their treatment, and that the discovery of cases of congenital syphilis, vulvo-vaginitis, and ophthalmia neonatorum rarely leads up to the treatment of the parents, infective cases, or contacts.

The Place of the Local Authority.

Scotland has evidently made up its mind that some scheme of notification with a view to securing the continuous treatment of sufferers is necessary. Even Mr. Lees, in whose clinic default is now so small, thinks some system of control is necessary to enable us to deal with patients who are irresponsive to the most skilled persuasive powers, with suspected and known sources of infection, and with known sources and cases of hereditary disease. He favours a system of confidential notification and compulsory continuous treatment, such as that in force in Canada. Dr. A. K. Chalmers thought schemes should be carried out directly by the local authorities, and said there was a growing feeling that we were not getting the best results from the large expenditure involved. Dr. W. A. Daley (Blackburn) favoured an experiment in notification and the treatment of women and children at maternity and child welfare centres. Dr. R. F. M. Picken (Cardiff) said it was difficult to get health committees really interested as long as they were contracted out of the schemes. Judge Harvey (convener of the Edinburgh Health Committee) said that 27 recalcitrant authorities in Scotland which had not yet adopted schemes should be pressed, and mentioned that no proper treatment had yet been adopted in prisons in Scotland. Sir Henry Keith mentioned that the Convention of Scottish Burghs has passed a resolution in favour of notification. Many speakers with experience of treatment drew attention to one great advantage from having the V.D. clinics at general hospitals—namely, that the syphilologist thus readily secures the consultative assistance of the ophthalmologist, dermatologist, neurologist, &c. Colonel Harrison thought that at the present time the improvement of facilities at the clinics was much more pressing than the consideration of compulsory notification or treatment. Dr. Letitia Fairfield produced evidence that more of the gonorrhœa cases were seeking treatment at the clinics. The work of the lady almoner was invaluable. She was able to follow up clues and get contacts, not by asking questions but by listening, in her capacity as booking clerk, to the stories of patients who appealed for her help. In London they were opposed to notification. Improved treatment was wanted for all gynæcological ailments and the married working class woman had too low a standard of health.

The Position of the General Practitioner.

The treatment of both gonorrhœa and syphilis has become so highly technical that it is obvious that general practitioners who desire to carry out the treatment will have to specially qualify themselves. If they have done so, the treatment of patients will make such demands on their time that it is difficult to see how they can receive adequate financial compensation from the patients themselves. Where a V.D. centre, as in the case of Edinburgh, serves a large area, Mr. Lees favoured the establishment of local subcentres under the direction of the principal centre, where daily and intermediate treatment can be carried out. At such subcentres panels of general practitioners could possibly work, with the advantage of being able to consult with the specialist at the centre. The family doctor's coöperation must be obtained. Under present circumstances he should be invaluable in securing the treatment of contacts and infecting cases in the family. The need for clerical assistance being provided at each clinic was emphasised during the discussions, in order that each general practitioner may receive full particulars with regard to each patient sent by him to the clinic. The possibilities of "team" work were mentioned by which one general practitioner, specially trained, could undertake V.D. treatment for his neighbours.

Imperial Questions.

The last day of the Congress was devoted to the discussion of problems in the prevention and treatment of V.D. in the various parts of the Empire. Mr. L. S. Amery, M.P., president of the section, said the problems in the Dominions were not essentially different from those in this country, but that the interchange of ideas and experiences would add to the common stock of knowledge and efficiency. In the discussion the work which is being carried out in Canada, Australia, India, South, East, and West Africa, and the West Indies came under review and the Congress concluded with a discussion on propaganda among illiterate races.

To those who feel discouraged by the smallness of the results when compared with the immensity of the problem we commend the cheery dictum of Dr. Margaret Rorke: "We have made great strides in the last seven years; in another ten we shall work wonders."

THE NEW NATURAL BATHS AT BUXTON.

The Opening Ceremony.

On the afternoon of Saturday, May 17th, the new natural baths at Buxton were formally opened by Sir Humphry Rolleston. The ceremony was performed in fine weather before a large assembly of townsfolk and visitors, and, as guests of the corporation, there were gathered representatives of the medical profession from all parts of the country. The platform party included the Duke of Devonshire, Lord Hartington, M.P., the mayors of several towns, and local civic dignitaries. The Mayor of Buxton, Mr. G. Smithurst, in welcoming Sir Humphry Rolleston, said they had always regarded their ownership of the springs in Buxton as a national trust as well as a local asset. Dr. T. H. Cooper, Chairman of the Baths Committee, together with the architect and the contractor of the new structure, were presented to Sir Humphry Rolleston, who then performed the opening rite. He said:—

"The very few words that are necessary to declare open the new natural mineral-water baths must begin with what is uppermost in our minds—namely, sincere congratulations to the corporation on their wisdom in initiating and so satisfactorily carrying through this great undertaking. This progressive policy, though no doubt in these times not without its attendant anxieties, is the true road to success, and, further, the corporation has made success the more certain by asking the medical profession for their advice, and by taking the somewhat rare and original course of following it. Though with great natural advantages in its healthy and beautiful surroundings, Buxton has done right in making every endeavour to utilise the outstanding properties of its waters by the most complete installation of balneological appliances. Further, the corporation is to be congratulated on realising the importance of continually breaking fresh ground—of making new knowledge, and of putting this into practice by subsidising the research laboratories at the Devonshire Hospital. From a medical point of view this is of paramount importance, for there is still a great deal to learn about the diseases which patients come to Buxton to have cured on the one hand, and about the method of action of the waters on these diseases on the other hand.

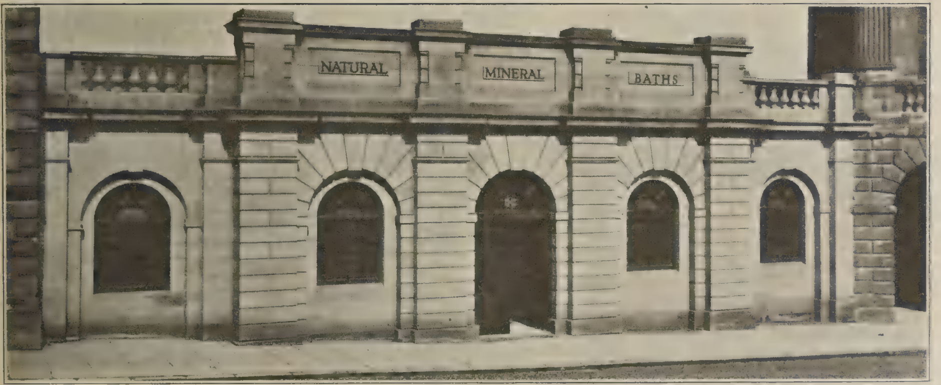
"The new mineral baths, which I now have the honour to declare open, therefore start on their career with the best auguries—namely, a scientific in place of the old empirical basis of treatment. Thus they deserve, as we may confidently believe they will achieve, high success."

Inspection of the Baths.

A vote of thanks to Sir Humphry Rolleston having been proposed by the Duke of Devonshire, a tour of inspection of the baths was then made. These baths are termed "natural" because in the case of swimming and immersion baths the water is continually flowing through them and the patient is thus immersed in a stream of running water as in the more primitive forms, where the patients bathe in a pool or lake at the source of the spring. The new building is contiguous to the south end of the famous crescent and is designed in harmony with its surroundings. A lounge panelled in oak leads to the swimming pools, which are three in number, two for men and one for ladies. The largest is 30 ft. long by 18 ft. wide, and is situated over one of the principal springs, the water from which enters the bath through perforated marble slabs which are placed on the surface of the rock. The blue colour of the water is shown up by the white marble and tiling, and large bubbles of gas rise continuously to the surface. The ladies' bathing pool is similarly planned, with perhaps special attention to those refinements which add not a little to the success of the cure.

The springs of Buxton are of two kinds: the radio-active thermal water, upon which the fame of Buxton throughout has been based, and the chalybeate spring. The thermal water emerges from the limestone rock, which forms one of the geological features of the district, by nine springs which are undoubtedly outlets from the same subterranean reservoir, as they are identical in temperature and composition and rise within a radius of a few yards. From one of these springs alone about 2,000,000 litres flow daily at a uniform temperature of 82° F. The gas with which the water is impregnated consists chiefly of nitrogen and CO_2, but contains argon, helium, neon, and other elements. The temperature of the swimming bath, at 82° F., is thus pleasant and stimulating. In addition to the swimming pools a new bath has been devised and installed in which the water is warmed to 90° F. by means of a special calorifier while still running continuously through the bath, thus retaining its natural character of running water and losing none of its gases or radio-activity. A further addition to this bath, which is also in use in the hot baths, is an apparatus by which compressed air can be forced through the water setting up a strong effervescence. It is anticipated that this new method will prove a most valuable addition to the modes of treatment already in use. Among the chief improvements and additions which have been made since the principle of heating water was adopted have been the undercurrent douche and the Buxton system of douche massage.

FIG. 1.

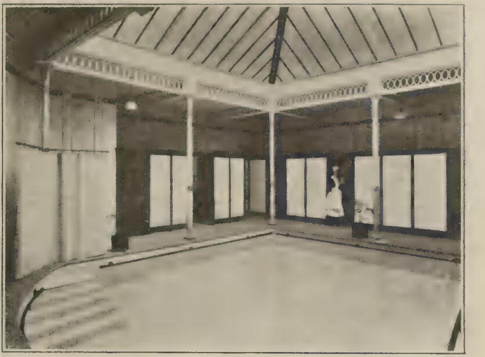


The New Baths, Buxton. [*Photos by Hunters, Buxton.*

The Devonshire Hospital.

Following the inspection of the baths and St. Ann's Well, one of the principal springs, where the waters may be drunk in comfort, tea was provided for the guests in the Buxton gardens. This was followed by a visit to the Devonshire Hospital, which claims to be the largest hospital for rheumatic disease in the world, with 300 beds and an out-patient department. It is in the laboratory of the Devonshire Hospital that research is being carried out as to the properties and effects of the Buxton waters both in their external and in their internal application.

FIG. 2.



Ladies' Swimming Bath.

The Banquet.

In the evening a banquet was given by the corporation at the Palace Hotel. Over 130 guests were present and of these about 100 were medical men. Responding to the toast of his health, Sir Humphry Rolleston said:—

"Among health resorts a distinction should perhaps be more definitely drawn between: (1) Those benefiting the visitors in a general manner on account of the climatic conditions, pure air and water, altitude, atmospheric temperature and composition, winds, sun, and other factors; and (2) spas which in addition exert a specific action on the visitors in virtue of the effects of the external and internal use of waters, and of the utilisation of active principles contained in the water.

"1. That a change of environment exerts an influence is a commonplace; thus improvement in health may follow a visit either to a health resort without any special baths or waters, or to a spa where no real use is made of the special advantages that it possesses. The study of the effects due to such a change comes under the heading of medical climatology, but that climatology and hydrology should be closely connected is too obvious to require argument. A regulated life, supervised diet and exercise, and freedom from worry are no doubt more easily ensured at a health resort than at home, and in some instances the good effects of a visit to a health resort are thus explained; in the past spas were often used as pleasant places for an irresponsible holiday after a busy season or life in town without any serious attention to the special requirements of the individual visitor, or to the peculiar properties of the spa treatment. Where and when this spirit exists and as long as the tide of fashion is sufficient to keep the resort full, there is a danger that the special properties of the waters and the best methods of applying them will be neglected, for the demand controls the supply, and scientific investigation receives no encouragement and less stimulus. The bathing establishments, if there are any, are not kept up to date, and their value and use even as a window-dressing attraction will dwindle progressively. Buxton is in no way open to any reproach on these scores, and while far from relying on them alone has great natural advantages from its altitude (1000 ft.) and beautiful surroundings; it has much historical interest, sharing with Bath the imprimatur of Roman patronage. These are most important accessories, for it would be a grave mistake to neglect the psychological factor of inspiring a helpful *joie de vivre* among those who come for a cure, and thus to obviate the boredom that a search for health and relief from pain may bring in its train. Cheerful and attractive surroundings and pleasing distractions have their proper place in a cure, and it must be admitted that, in the past at least, British health resorts have lagged behind many on the continent. But this handicap is rapidly being eliminated.

"2. The second category of health resorts is that of the spas with their medicinal waters and careful medical supervision—two factors inseparable for success. Spas, such as Buxton, Bath, and Harrogate, are, as Dr. Fortescue Fox, our leader in hydrology, has insisted, a national asset. But their value must depend on skilled control of the patients, and circumstances are not always and everywhere favourable to the fulfilment of this necessary condition. Directions as to diet and treatment may be given but not faithfully followed, and it is not surprising that such 'a cure' brings disappointment. An obvious remedy against dietetic lapses is to remove temptation, so that patients undergoing a cure should find it impossible at their hotels to go outside their prescribed dietary, both as regards quality and perhaps even the more difficult question of quantity. The British spas have their special characters, and the tonic ones, such as Buxton, need fear no rivals in their natural advantages; but to render these fully available an up-to-date and complete installation, such as is being opened here to-day, is necessary. In addition to the baths and other appliances for hydrological treatment and to all that is included under physiotherapy, such as massage, exercises, and electricity, an important department is that for the diagnosis and controlled treatment of disease; the poor and those of limited means can be cared for in the mineral-water hospitals, such as the Devonshire Hospital here, with its 300 beds and clinical laboratories; but for the well-to-do, as is perhaps in keeping with our characteristics of national individualism and freedom, there are only hotels, pensions, and lodgings with practically complete liberty of action and varying degrees of luxury. Should not these unconsciously unfortunates have equal advantages with the poorer sufferers and have the opportunity of going into hostels or nursing homes with all the advantages of an up-to-date clinic?

The Importance of Research Work.

"Clinical and biochemical laboratories, such as are attached to the Devonshire Hospital, are essential not only for the accurate diagnosis of the diseases of individual patients but for the maintenance and advance of the science of hydrology and physiotherapy. These methods of treatment, which are so closely allied to the *vis medicatrix naturæ*, have in the course of their long existence passed from an early semi-religious and superstitious period, through a long empirical phase, into the scientific era which began about half a century ago. A good deal of investigation has been started especially since, and because of the stimulus of the war, but the science of hydrology is still in an early stage of development. Of the physiological effects of water internally and externally there is an enormous amount to be learnt, and the profession naturally looks to its members with the opportunities at their hand to take a leading share in the advance of hydrology. This has been fully recognised by British leaders in hydrology, and their exertions are shown in the young and energetic *Archives of Medical Hydrology*. The future of scientific medical hydrology, and so the lasting and genuine success of spas, depends on research, and it is desirable to emphasise the principle that the only real advertisement of a spa is the publication of good research work into the properties—chemical, biological, and therapeutical—of the waters and into the diseases which can be beneficially treated thereby. It is to their honour that the municipality of Buxton have recognised the value of such work and have contributed to the salary of the analytical chemist attached to the research laboratory of the Devonshire Hospital."

"The Prosperity of Buxton" was proposed by the Duke of Devonshire, who said that people talked in these days about the key industries; he thought the key of all industries was health. Buxton, he said, had made a real contribution to the subject. In reply to the toast of "The Guests," proposed by Alderman C. W. Buckley, M.D., Sir W. H. Willcox and Dr. R. A. Fleming responded.

The guests included the Duke of Devonshire, Lord Hartington, the Lord Mayor of Sheffield, the Mayors of Salford, Bath, Stockport, Derby, Ilkeston, Macclesfield, and Leamington, the Rev. J. Stainer Wilkinson, Sir W. H. Willcox, Dr. G. Newton Pitt, Sir J. W. Moore, Canon Scott-Moncrieff, Sir W. J. Thompson, Dr. H. R. Spencer, Dr. F. J. Poynton, Dr. R. A. Fleming, Dr. R. Fortescue Fox, Sir James Barr, Dr. W. J. Tyson, Mr. A. R. Courtenay, Dr. J. D. Stanley, Dr. E. P. Poulton, Dr. W. Edgecombe, Dr. Langdon Brown, Dr. C. Wilson, Dr. J. S. Bury, Dr. A. G. Gibson, and Alderman T. H. Cooper.

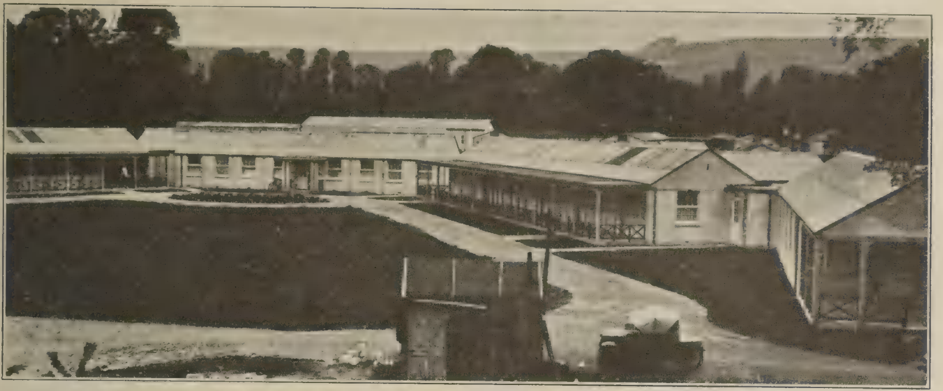
On the following day the guests were entertained to luncheon at the Buxton Hydropathic, and were taken for drives through the picturesque Peak District by the corporation.

ROYAL UNITED HOSPITAL, BATH.

OPENING OF PRIVATE AND ORTHOPÆDIC WARDS.

ON May 16th an extension of the Royal United Hospital, Bath, was formally opened by the Duke of Connaught, who was welcomed by Lieut.-Colonel E. Lewis, deputy chairman of the Royal United Hospital, acting for Sir Percy Stothert, chairman, who was unavoidably absent through illness. The Royal United Hospital was formed in 1826 by the amalgamation of two hospitals, and in 1866 a new wing was added as a memorial to Prince Albert. The hospital, which serves the city of Bath and an area of 20 miles round, occupies a site in the city which does not allow of any further extension. A scheme for an

Fig. 1.



Royal United Hospital, Bath. General View of the Private Wards.

[*Photos by permission of "Bath Herald."*

Fig. 2.

Interior of a Ward (12 Beds).

extension on a new site, and provision of paying wards for persons of moderate means, was placed before the managing board in 1920 by certain members of the staff of the hospital, the suggested site being the land at Combe Park on which the Bath War Hospital was built in 1915. This scheme was subsequently adopted at a public meeting in the Guildhall, Bath. The site at Combe Park, consisting of about 20 acres, was purchased, a portion being retained and the remainder leased to the Pensions Ministry, which had taken over the war hospital. On the portion retained, the private hospital and an orthopædic hospital for the treatment of surgical tuberculosis in children have been erected. The private hospital is a one-storey building with a total accommodation of 72 beds. In the admission of patients preference will be given to those from Bath and the area covered by the Royal United Hospital, but others will be admitted provided there are beds available. All patients can be attended by their own doctors.

About 100 yards to the north of the private hospital is the orthopædic ward, consisting of one large open-air room about 80 feet long and 30 feet wide, giving accommodation for the reception of 37 patients. The ward faces due south and is open in its entire length, but has a sun balcony in front of it partially covered by a lean-to glass roof. The surgical staff consists of members of the staff of the Royal United Hospital, and there is a specially trained nursing staff. In accordance with the requirements of the Board of Education, children while undergoing treatment in hospital will be educated by a fully qualified schoolmistress.

It is proposed that this shall be the central unit of an organisation covering the area served by the Royal United Hospital in parts of Somerset, Wiltshire, and Gloucestershire, on the lines of the Wingfield and Shropshire Orthopædic Hospitals, and local clinics will be established at suitable centres throughout the area at which will be carried out outpatient treatment, periodical inspection of all outside cases, the examination and diagnosis of new cases. A specially trained orthopædic after-care sister from the central hospital will visit them regularly, and members of the surgical staff of the hospital will attend at stated intervals. These clinics will be controlled by local committees in coöperation with the medical men practising in their neighbourhood.

On Wednesday, May 28th, a meeting will be held at the hospital by the Bath Division of the British Medical Association, which will be in the nature of an official medical opening of the new wards. These will be open for inspection, and Lord Dawson of Penn will deliver an address.

UNITED STATES OF AMERICA.

(From an Occasional Correspondent.)

Cyanogen Chloride for Fumigation.

Since the introduction of cyanogen as a fumigating agent on board ships several fatal accidents have been reported from various parts of the world, so that it became evident that either a very valuable disinfectant—fatal in comparatively low concentration both to insects and vermin yet comparatively non-injurious to cargo—must either be abandoned or else improved precautionary measures must be introduced. The United States Public Health Service has been experimenting with the latter object in view and during the last year has elaborated a chemical safeguard which has so far given most satisfactory results. It consists in combining the cyanogen with chlorine so that the poisonous fumes may give urgent warning of their presence. Cyanogen chloride is said to be produced by a chemical reaction which is expressed as follows :—

$$3\ NaCN + NaClO_3 + 6\ HCl = 4\ NaCl + 3\ H_2O + 3\ CNCl.$$

The following prescription furnishes sufficient gas for the fumigation of 1000 cubic feet:—

Sodium cyanide	℥iv.	Hydrochloric acid ..	℥xvii.
Sodium chlorate	℥ii.	Water	℥xvii.

During the last nine months this gas has been used as a routine at the port of Baltimore quarantine station. On two occasions stowaways have escaped the vigilance and warning cries of those sent down to clear the hold—on one occasion the man said that he was asleep in his hiding place, and on the other he escaped without being noticed to the deck, where he hid in a coil of rope. Both men were driven off the ship by the "tear-gas" action of the new compound before the cyanide action had time to cause any serious injury. It is found, too, that by the time the former action is lost through dilution, the latter has also disappeared.

I understand that the only reason which has prevented the Public Health Service from publishing this discovery is its natural anxiety to give the method a thorough trial and to perfect the technique. It was found at Baltimore, for example, that there is danger of causing fire through the excessive heat developed in the chemical reaction, and that this danger could be obviated by first dissolving the sodium chlorate in water, so that those making the mixture are obliged to dilute the final solution to a certain degree. I had the privilege of witnessing a demonstration, and noticed the bright yellow fumes of cyanogen chloride and the very marked irritant effect on the mucous membranes of those who were imprudent enough to sample even a small and well-diluted dose.

Automobile Accidents in 1923.

Estimates issued by the National Bureau of Casualty and Surety Underwriters indicate that the 1922 record number of fatal automobile accidents has been exceeded by some 2000 deaths in 1923. Accidents occurring at level crossings are still a common source of fatalities, despite the terrifying pictures exhibited at all railway stations showing with vivid realism the immediate preliminaries to such a disaster. These accidents included, the total amounts to more than 17,000 deaths. Roughly, one-third of the slain were children under 15 years of age.

Tuberculosis Research at Johns Hopkins Hospital.

A great deal of work on the nature of infection and the development of immunity in tuberculosis has been carried out in recent years at Johns Hopkins. The results have not been spectacular, but on the other hand a foundation is being laid, a foundation of fundamental knowledge derived from carefully controlled animal experimentation which is certain to prove of great value to tuberculosis research everywhere. Much of this work has been published in your columns. In giving their report this week of the "work in progress in the Kenneth Dows Tuberculosis Laboratory" Dr. A. K. Krause and Dr. H. S. Willis reminded the Medical Society of Johns Hopkins Hospital of the important distinction to be drawn between tuberculosis in the guinea-pig and in the rabbit. The former shows pathological changes associated with the absence of lymphatic tissue in the parenchyma of the lung and its abundance at the hilum, the latter a pulmonary type of tuberculosis associated with lymphatic deposits at every bifurcation of the bronchial tree with atrophied glands at the hilum. The experimental guinea-pig thus corresponds very closely with the infected human child, the experimental rabbit anatomically and clinically reproduces the human adult.

The recent work hitherto unpublished includes experiments to determine the rate of migration of infecting bacilli in normal and in allergic pigs. An intradermal dose of living bacilli was given to young guinea-pigs and their migration controlled (1) by removal of an area of skin for 15-18 mm. around the point of inoculation at varying intervals after the injection; (2) by removal of the neighbouring lymphatic nodes at varying intervals and examination of same for bacilli. The experimenters were surprised at the rapidity with which the bacilli found their way in normal animals to a distance from the point of injection into the skin. Within four hours (in one case within a single hour) they had traversed the area of skin excised. It took from 10 to 24 hours to reach the nearest lymphatic gland. In allergic animals, on the other hand, the time was very greatly increased. Three to four days were needed to traverse the area of excised skin and as much as two to three weeks to reach the nearest lymph-nodes. Another set of experiments was designed to determine whether continuous reinfection with sub-lethal doses could bring about a progressive and fatal tuberculosis. The R1 strain—an avirulent bacillus originally isolated by Dr. Trudeau at Saranac Lake—was selected for this experiment. It was found that 86 daily intradermal injections did not have this effect, only a slight depression of allergy resulted. A second batch of animals given daily inoculations were killed on the sixty-ninth day. Although there were multiple subcutaneous abscesses no visceral tuberculosis was observed. However, the interesting observation was made that all the serous membranes were covered with adhesive exudate. This phenomenon Dr. Krause does not explain—he proposes to investigate it further. Again, a third batch of animals were given daily inoculations for from 30 to 50 days and then inoculated with a virulent germ. Comparison with controls (normal animals and animals inoculated with a single dose of R 1) indicated that the immunity had been lowered to some extent by the series of inoculations.

I understand that the whole series of experiments are to be reported in detail in a forthcoming number of the American *Review of Tuberculosis.*

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 10TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely: Small-pox, 82; scarlet fever, 1420; diphtheria, 627; enteric fever, 65; pneumonia, 1011; puerperal fever, 29; cerebro-spinal fever, 9; acute poliomyelitis, 6; acute polioencephalitis, 2; encephalitis lethargica, 290; dysentery, 2; ophthalmia neonatorum, 119. No cases of cholera, plague, or typhus fever were notified. The cases of encephalitis lethargica showed an increase on the figure 278 of the previous week.

Deaths.—In the aggregate of great towns the deaths from influenza fell further from 167 to 95. In London the deaths from diphtheria fell to 7, those from measles to 22, while the deaths from influenza numbered only 11.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Act. Surgeon Lts. (D) to be Surgeon Lts. (D): E. R. Longhurst, M. V. Barnes, C. J. Barrable, D. L. Simpson, and D. H. Le Marchant.

ROYAL ARMY MEDICAL CORPS.

Capt. G. Fleming retires receiving a gratuity.

ROYAL ARMY MEDICAL COLLEGE.

Maj. G. De la Cour, R.A.M.C., to be Professor, vice Lt.-Col. and Bt. Col. J. W. West, K.H.S., R.A.M.C.

TERRITORIAL ARMY.

E. L. Elliott (late Royal Navy) to be Capt.

J. C. Adam and C. Stewart to be Lts.

ROYAL AIR FORCE.

Flight Lt. W. D. Miller is transferred to the Reserve, Class D.2.

DEATHS IN THE SERVICES.

Deputy Inspector-General Archibald McKinlay, R.N., retired, who died on May 17th at Southsea, qualified as L.R.C.S.I. in 1872 and as L.R.C.P.I. in the following year, entered the Royal Navy as a surgeon in 1874, and was subsequently appointed to the *Nymphe* in Australia. In 1880 he joined the gunboat *Mosquito* in China, and saw active service in this vessel during the Egyptian War of 1882 (Egyptian medal and Khedive's bronze star). He was promoted to staff surgeon in 1886, and fleet surgeon in 1891. He retired in 1905.

Correspondence.

"Audi alteram partem."

THE MANCHESTER RADIUM INSTITUTE.

To the Editor of THE LANCET.

SIR,—The annotation in your current issue on the last annual report of the Manchester and District Radium Institute raises one or two points and omits others. For instance, it quotes the fact that 64 cases of malignant disease were rendered free from symptoms and signs of disease during the year, saying at the same time that the result is satisfactory enough as far as it goes, but many of these cases can only have been treated within a few months of writing the report, and the question of permanent benefit must be judged after a longer interval of time. This statement is obviously perfectly correct, but as a criticism it is not so good. Every year an annual report has to make a statement of what has been going on during the year. Therefore this quotation of 64 cases is merely that and nothing more. If any claim at all were to be made it would be merely that they were 64 examples of supremely good palliation. As a matter of fact, in a report of an institute such as the Manchester and District Radium Institute, one report alone cannot be regarded as an entity entirely separated from its fellows. In the year 1921, 2500 cases were reported upon, 1753 of which were malignant, none of which had been treated during the two years or more immediately preceding the report. The period dealt with was one of five years—viz., from 1915 to 1919 inclusive. I think it is only fair that those figures alone should be taken as a reasoned statement of what may be expected from radium treatment over a prolonged period.

Practically every year a smaller branch of the subject is dealt with, as it is manifestly impossible to go to the tremendous labour of dealing with thousands of cases each year in the report. In the report for the year 1923, for instance, carcinoma of the body of the uterus is dealt with in detail over a period of years, also cases of uterine hæmorrhage from various causes. In these cases the figures give an idea of what may ultimately be expected in radium treatment of these conditions. In the present report (for 1923) details of technique are given specifically in the case of carcinoma of the body of the uterus and uterine hæmorrhage, which are dealt with at length. It cannot be expected that each report will be a text-book, or part of a text-book, on radium treatment. As long ago as 1919 the technique of the use of unscreened tubes in the treatment of carcinoma of the mouth was given. The technique is perfectly simple and remains almost the same. The only thing being that now it seems to be firmly established that one millicurie of emanation in an unscreened glass tube left in a tumour indefinitely can be placed in each cubic centimetre of growth safely.

I do not regard the term "seeds" as being scientific. It is used in parts of the United States, although one of the most experienced radiologists there does not use the expression, but calls them "active points," while in the reports of the Manchester and District Radium Institute they are referred to consistently each year as unscreened tubes. This method of treatment of carcinoma of the mouth, and for that matter epithelioma of the vulva, is very satisfactory, and for that reason has been persevered with in Manchester. So far we have not used the French method of burying very small, screened quantities of radium in tumours of the mouth for long periods. I have not had the opportunity of personally seeing it done, and would rather do so before adopting a technique which, so far as I can hear, does not promise results better than those obtained from the use of unscreened tubes. With regard to the criticism of the treatment of cases of carcinoma of the breast, the statement concerning the use of diathermy is purely preliminary, and it does not seem justifiable at this stage to give too definite details as to the technique. The burying of emanation tubes along the course of the lymphatics is a perfectly simple procedure, and it needs nothing but a little practice. This procedure was dealt with in the report of the year 1916.

I feel that any critic of a report such as that of the Manchester and District Radium Institute should acquaint himself with what has already been written in the previous reports, and consider it merely as one of a series.

I am, Sir, yours faithfully,
May 19th, 1924. ARTHUR BURROWS.

BATHING AND EAR DISEASE.

To the Editor of THE LANCET.

SIR,—Now that the bathing season is about to commence, there is one question which might well be considered—namely, is it desirable in apparently healthy children to take precautions to prevent the entrance of water into the ears? The aural surgeons whom I have asked say that it is. Further, Milligan and Wingrave, in their "Diseases of the Ear" (p. 18), give among the causes of ear disease "the entrance of cold water into the external meatus, as in bathing and diving," and, indeed, it is easy to see how a breaking wave may cause inflammation of the membrana to be followed by middle-ear disease and deafness.

Valuable suggestions may be gained from nature. The seals, which are carnivorous mammals adapted for an amphibious life, have no external ears. In them "the auditory nerve is very large, and though the auricular aperture is closed by a mechanism somewhat similar to that which shuts the nostrils in order to protect the internal parts of the organ from the consequences of the great pressure of the water when the animal is in the deeps, it is evident that seals hear very well under water."[1] In his "Physiology" (1867, vol. i., p. 522) Marshall tells us that in the water-shrew the ear is provided with a valve-like antitragus, to prevent the entrance of water into the ear when diving.

When one considers how serious is ear disease, and how easily the entrance of water can be prevented, either with a pad of non-absorbent wool or the wearing of a rubber cap with ear flaps, it would seem that the precautions are worth while.

I am, Sir, yours faithfully,
WALTER EDMUNDS.
Carlton-road, Putney, S.W, May 15th, 1924.

THE PSYCHOLOGY OF VERTIGO.

To the Editor of THE LANCET.

SIR,—As you say in your leading article of May 10th, Dr. W. F. Menzies has succeeded in raising a problem of considerable interest, by drawing attention to the fact that vertigo may be of psychical origin, but his laudable desire to correlate mental with physical phenomena has prevented him from going far enough —psychologically. Dr. Menzies mentions that vertigo is accompanied by a fear of falling; but I agree with you, Sir, when you state that fear is not necessarily an accompaniment of vertigo. Nevertheless, it occurs invariably in association with vertigo of purely psychical origin. In anxiety states the fear of falling, with or without vertigo, is extremely common; the presence or absence of vertigo being dependent merely on the intensity of the fear.

Medical psychologists who have analysed this fear have discovered that it owes its origin to the repression of a desire "to fall" symbolically—i.e., in a moral sense. We find that the same symbolism applies to the falling dream and to hallucinations of falling in psychotic cases, these being the disguised fulfilment of an unconscious wish to fall *morally*. It occurs in anxiety states because the unconscious wish is strong enough to escape the repressing forces in symbolic guise; in other conditions it is due to weakening of the repressing forces. Now, in mental disease of toxic or organic origin, such as acute confusional insanity or general paralysis, the effect of the damage to the cerebral cortex is to weaken the repressing forces, the moral, social, ethical, and conventional instincts, the ego instincts as they have been called; the unconscious thus obtains an opportunity for self-expression and the unconscious *desire* to fall becomes represented in consciousness by its opposite—*fear* of falling—with or without vertigo.

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[1] Knight's Cyclopædia of Natural History, 1856.

The reason why the symptom, when present in the early stages of general paralysis, disappears later is that in advanced general paralysis the patient's repression is completely destroyed, and he then fully realises his formerly unconscious, but now conscious, wishes by, for example, delusionally possessing thousands of concubines and impregnating the lot every night of his life. My contention is that the semicircular canals have nothing whatever to do with this kind of vertigo.

May I add that giddiness or fear of falling when standing on a height arises in yet another way. It is always traceable (in my experience) to one or more forgotten height incidents in early childhood, usually about the end of the first year of life. Probably the patient has not reached emotionally to the situation at the time; but as soon as it is revived in his memory he is cured of the fear. The psychology of sea-sickness, to which Dr. Menzies also alludes, is yet another story. Medical psychologists are familiar with dozens of ways in which patients associate the sea with their mother—in other words, the sea is a mother symbol. For our present purpose we need only refer to one of these associations—viz., the respiratory rise and fall of the mother's breast while the child is taking food. The rise and fall of a boat during a sea voyage tends to remind certain people of this forgotten situation in an unconscious way, and sea-sickness with its rejection of food is a mode of repressing this infantile memory.

I must not occupy more space by confirmatory details; I only wish to offer a hint that some forms of vertigo are due to purely mental mechanisms, having no relationship with the semicircular canals.

I am, Sir, yours faithfully,
W. H. B. Stoddart.
Cavendish-square, W., May 17th 1924.

POINTS IN THE ADMINISTRATION OF INSULIN.

To the Editor of The Lancet.

Sir,—The discomfort arising from the injection of insulin may be considered under three headings: (1) the prick of the needle, (2) the sensation of stinging following the injection, (3) the inflammatory reaction developing hours later.

(1) The discomfort due to the prick of the needle is almost negligible if the injection be given by a skilled individual and the needle be sharp and polished. If the patient give himself the injection it may be of advantage for him to be acquainted with the fact that some spots in the skin are more sensitive to pain than others. Occasionally the point of the needle is placed upon a pain spot and very considerable discomfort is felt on pressing the needle into the skin. Moving the point a very little may save much pain.

(2) The stinging sensation following immediately upon the injection, of which a small percentage of patients complain, is due to the insulin solution being slightly acid and distinctly hypotonic. If the sting were to be experienced, say, a few times or perhaps limited to 50 times, few patients would complain, but since many must be stung 700 times a year, it is surely worth while attempting to save them the discomfort. The manufacturers informed me that there are difficulties in dissolving insulin in isotonic solution, and that it is essential for the solution to be acid. The reasons were communicated to me, but are not of general interest. The method of overcoming the discomfort is by rendering the injection practically neutral—i.e., to a hydrogen-ion concentration of pH 7·6 and isotonic with blood. For instance, a solution containing 1·8 per cent. sodium chloride and N/1000 sodium hydrate when mixed with equal parts of one commercial brand of insulin will render the injection painless. It is true that the mixture will become cloudy owing to the precipitation of the insulin, but experience has shown that this suspension of insulin is just as efficient when injected as the solution of insulin. Naturally, the injection must be made very shortly after the two solutions have been mixed. I have found that small children who dreaded the sting now receive the neutral isotonic mixture with a smile.

(3) The inflammatory reaction developing hours after the injection of insulin has become rarer since insulin has become more and more pure. But even now a very small percentage of people develop it after the injection of one kind of insulin, and may not after the injection of another. Usually some brand of insulin may be found which satisfies the patient.

I am, Sir, yours faithfully,
May 13th, 1924. O. Leyton.

Medical News.

University of Cambridge.—At a congregation held on May 17th the following medical degrees were conferred:—

M.D.—C. M. Billington and *A. S. Burgess, Caius: D. V. Pickering, Emmanuel; and B. E. Jerwood, Sidney.
B.Ch.—W. H. Craib, Caius; J. C. Ainsworth-Davis, Christ's.
* Admitted by proxy.

University of Oxford: *Radcliffe Prize.*—The next award will be in March, 1925. The prize, which is of the value of £50, is awarded by the Master and Fellows of University College, Oxford, every second year for research in any branch of medical science, comprised under the following heads: human anatomy, physiology, pharmacology, pathology, medicine, surgery, obstetrics, gynæcology, forensic medicine, hygiene. The prize is open to all graduates of the University who have proceeded, or are proceeding, to a medical degree in the University. Candidates must send in their memoirs to the Assistant Registrar, at the University Registry, on or before Dec. 1st, 1924.

University of Paris.—The Faculty of Medicine of the University announces a post-graduate course to be held at the Clinique médicale de l'Hôtel Dieu from June 30th to July 11th under the direction of Prof. M. A. Gilbert and Dr. M. Maurice Villaret. The subject of the course will be Recent Medical and Chirurgical Advances in Diseases of the Liver, of the Biliary Passages, of the Pancreas, and in Connexion with Diabetes. The course will consist of 32 meetings and will be provided with abundant illustrative clinical material. It is open to all qualified medical men and a laboratory fee of 150 francs is charged. The full programme and further particulars may be obtained from the Secretary, Faculté de Médecine, Université de Paris.

Royal College of Surgeons of Edinburgh.—At a meeting of the College held on May 16th, Sir Harold J. Stiles, President, in the chair, the 19 successful candidates out of 36 entered, who passed the requisite examinations between Jan. 14th and 18th, 1924, were admitted Fellows:—

John S. Bow, William G. H. Cuscaden, Thomas Gardner, Arthur J. C. Hamilton, David Huey, Shankar R. Joglekar, Ratenshah N. Kapadia, Havelock T. Lippiatt, Malcolm R. MacCharles, James S. McLaren, Otto W. Niemeier, John S. O'Neill, Montague M. Ostrowick, Richard R. M. Porter, Kenneth M. Purves, Douglas H. Saunders, Frederick N. Spittel, Harry W. Whytock, and George A. W. Wickramasuriya.

At the same meeting the Bathgate Memorial Prize, consisting of bronze medal and set of books, was, after a competitive examination in Materia Medica, awarded to Mr. Cecil A. S. Hamilton.

The following candidates having passed the requisite examinations received the Higher Dental Diploma:—Geoffrey M. Yardley, Robert M. Meldrum, and Wilfred J. J. Craig.

Aberdeen University Club.—The bi-annual dinner of the Club will be held at Gatti's Restaurant, Strand, London, W.C. 2, on Saturday, May 31st, at 7.30 P.M. Prof. Harrower will preside. The hon. secretary, Dr. W. A. Milligan, 11, Upper Brook-street, W. 1, will be pleased to hear from either past or present graduates (men or women) wishing to join the Club or attend the dinner.

FEDERATION OF MEDICAL AND ALLIED SERVICES.—The Prime Minister will attend the annual dinner of the Federation on June 20th, as will also the Minister of Health and Sir William Joynson-Hicks, M.P., the late Minister of Health. It is particularly requested that applications for tickets, price 12*s.* 6*d.*, be made to the Secretary as early as possible, at 12, Stratford-place, London, W. 1. The function will provide an excellent opportunity for medical men and their friends to meet prominent political and business men interested in preventive medicine.

CHADWICK PUBLIC LECTURES.—A lecture (illustrated by lantern slides) on Women in Dangerous Trades, by Miss Constance Smith, will be given in the Lecture Hall, Bedford College, Regent's-Park, N.W., on Tuesday, May 27th, at 8 P.M. Miss Tuke will be in the chair.—On Wednesday, June 4th, at 5.15 P.M., an open-air lecture will be given by Sir David Prain in the Chelsea Physic Garden, Swan-walk, Chelsea, on the Economic and Hygienic Relationships of Cinchona Bark and its Alkaloids. Sir William J. Collins, chairman of the Chadwick Trustees, will be in the chair.

ROYAL SANITARY INSTITUTE.—A sessional meeting of the Institute will be held on Friday, May 30th, in the Royal Spa Rooms, Harrogate, at 5.15 P.M., when discussions will take place on Public Health Services—Are They Worth the Money Expended ? to be opened by Dr. J. R. Kaye, medical officer to the West Riding County Council. Openers of the discussion from the point of view of Medical Officer, Dr. J. J. Buchan (Bradford) ; Sanitary Inspector, Mr. T. Foley Cass (Chief Sanitary Inspector, Hull) ; Health Visitor, Miss A. Brooke (Inspector of Midwives and Health Visitors, W.R.C.C.). The chair will be taken by Dr. John Robertson. Those proposing to attend the meeting should notify Dr. J. Mair, medical officer of health, 5, Haywra-crescent, Harrogate, immediately.

MILK-SUPPLY TO HOSPITALS.—An arrangement has now been completed under which the Hospital for Sick Children, Great Ormond-street, and the National Hospital for the Paralysed and Epileptic take between them the entire milk output of a dairy farm. The farm, which is situated at West Hill House, Culworth, Banbury, is open to the inspection of representatives of the hospitals, and the milk, after its arrival in London, is submitted to a series of tests for food values and absence of deleterious substances. The conditions under which the milk is produced are ideal. The cows are milked by Vaccar milking machines, and every vessel with which the milk comes in contact has been subjected to sterilisation by steam. Finally the milk is placed in hermetically sealed churns, which are not opened until they reach the hospitals. For the children in the Great Ormond-street institution the milk is pasteurised in bottles before being delivered to the wards.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The programme for the month of June comprises a special course in Gynæcology at the Chelsea Hospital for Women covering the whole month, commencing on June 2nd ; and a series of eight clinical demonstrations from June 3rd to 27th on the more important diseases of tropical countries by Dr. G. C. Low and Dr. P. H. Manson-Bahr at the London School of Tropical Medicine. In addition to the foregoing there will be an intensive course at the Royal Northern Hospital in conjunction with the Royal Chest Hospital (City-road) from June 16th to 28th. Beginning on June 16th, and continuing until July 12th, will be held a four weeks' course in Urology at St. Peter's Hospital for Stone. Clinical work will be available daily and lectures given dealing with the various aspects of urinary disease. Also commencing on June 16th to July 4th, a two weeks' course on Diseases of Children at the Children's Clinic (Western General Dispensary). For full particulars of the above courses application should be made to the Secretary, Fellowship of Medicine, 1, Wimpole-street, London, W.1.

BRUSSELS MEDICAL CONGRESS.—The Fourth Congress, known as the "Journées médicales de Bruxelles," will be held in the Palais d'Egmont from June 29th to July 2nd under the patronage of the King and Queen of the Belgians. During the four days of the Congress, which is open to medical men and women, clinical demonstrations and operations will be shown in the hospitals during the forenoon, and in the afternoons lectures and cinematographic illustrations will be given. A very interesting programme has been arranged, and among those attending the Conference will be Dr. Alexis Carrel, of the Rockefeller Institute of New York, Prof. Bordet, and Dr. Levaditi. On the fourth day the Congress will be held at Liége. During the Congress an exhibition of pharmaceutical products, surgical instruments, and hospital furniture will be held in the Palais d'Egmont. The fee for the Congress is 40 francs, and further information, together with full programme, may be obtained from Dr. René Beckers, general secretary, 36, rue Archimède, Brussels.

ROYAL MICROSCOPICAL SOCIETY.—The section of the Society which has been formed to deal with the Industrial Applications of the Microscope, and to assist in the development of Industrial Research in British Industries, will hold its next meeting at 20, Hanover-square, W., on Wednesday, May 28th, at 6.30 P.M., Mr. A. Chaston Chapman, F.R.S., presiding. Mr. J. E. Barnard, F.R.S., will give a résumé of the whole subject ; and communications will be made by Mr. E. Sheldon Leicester on the Use of the Microscope in the Examination of Paper, and Mr. Kenneth MacLennan on the Microscopy of Soaps. Messrs. R. and J. Beck, Ltd., and Messrs. Ogilvy and Co. will demonstrate some optical exhibits. Further particulars may be obtained from the hon. secretaries to the Section, at 20, Hanover-square, London, W. 1.

DUBLIN : THE HOSPITALS AND THE GAS STRIKE.—Recently the workers of the only gas company in Dublin went on strike, with the result that users not only in the city, but in all the suburbs for miles round have been left without gas, and much inconvenience and even hardship have resulted. In the hospitals and scientific laboratories there is also much inconvenience, from which the sick have to suffer. Sterilisation of dressings and instruments has become a matter of great difficulty, and X ray departments are in many cases held up. Bacteriological incubators have grown cold, and it is quite possible that some strains of organisms will perish. The inconvenience has been increased by the neglect of the gas company to warn its customers of the likelihood of a cessation of work until a few hours before the supply ceased, although there was nothing in the nature of a "lightning strike."

CO. GALWAY HEALTH SCHEME.—In pursuance of the resolutions passed at a recent meeting of the medical profession of Co. Galway, already reported in THE LANCET (May 3rd, 1924, p. 918), a deputation waited upon the Minister for Local Government last week for the purpose of laying before him their views in connexion with (1) the scheme of the Galway Co. Board of Health for the rearrangement of the dispensary districts and the reduction of the number of dispensary medical officers ; (2) the lack of hospital accommodation for the sick poor and the necessity for providing cottage hospitals in the county. The deputation urged on the Minister the necessity, both in the interests of public health and the sick poor, of providing a number of cottage hospitals in different parts of the county for the treatment of acute cases of illness where removal to the Central Hospital at Galway would expose the patients to grave risks, and where the home surroundings did not permit of efficient medical treatment. In reply, the Minister assured the deputation that there would be no reduction in the number of dispensary districts in the county, but that, as vacancies arose, the existing district arrangements would be open to review. He undertook to consider fully the question of providing cottage hospitals.

DONATIONS AND BEQUESTS.—Mrs. Lucy Forrest, of Marlow, Bucks, left £500 each to the Marlow Cottage Hospital and the Marlow Provident Nursing Association.—Mr. William Smith, of Honeybourne, Gloucestershire, who left estate valued at £26,261, gave it on trust as to one-fourth each to the following institutions : the Evesham Hospital, the Worcester Infirmary, the Stratford-on-Avon Hospital, and the Birmingham General Hospital.—Under the will of the late Miss Florence Annie Holmes, of Hove, Sussex, the Hove Hospital will benefit by a sum of £500.

THE LATE MR. WALTER THOMPSON.—The death of Walter Thompson, F.R.C.S., took place on May 12th at Headingley Leeds, at the age of 58. Mr. Thompson was a Yorkshire man, and was the son of a farmer in Wharfdale. He pursued his medical studies at Leeds and Berlin, qualified M.R.C.P. in 1887, and in 1891 became a Fellow of the Royal College of Surgeons of England. Mr. Thompson has for many years been an honorary surgeon and later consulting surgeon on the staff of the Leeds General Infirmary, and held honorary surgical appointments at other hospitals, including the Coronation Hospital, Ilkley, and the Malton Cottage Hospital, the Leeds Public Dispensary, and the Women's and Children's Hospital. During the war he rendered valuable service at Salonica, although he was not in the best of health when he volunteered for active service. He held the rank of Lieut.-Colonel in the R.A.M.C.T. On his return from Salonica Mr. Thompson was appointed head of the Beckett-street Military Hospital, in which he did much successful work until the end of the war. For some years he was Lecturer on Practical Surgery in the University of Leeds. Last November he was operated on for an internal malady by his close personal friend, Sir Berkeley Moynihan. His death was felt as a distinct loss to the medical profession both in Leeds and the surrounding district, and the esteem in which Mr. Thompson was held was attested by the large number of medical men from Leeds and district who attended his funeral.

NORTH-WESTERN TUBERCULOSIS SOCIETY. — An address, illustrated by lantern slides, will be given by Mr. H. Morriston Davies at the next meeting of this society, to be held at the Tuberculosis Offices, Joddrell-street, Deansgate, Manchester, on Thursday, May 29th, at 3.15 P.M.

CONFERENCE ON SCIENCE AND LABOUR.—This Conference, which has been arranged by the British Science Guild in coöperation with the National Joint Council of the Trades Union Congress and the Labour Party, will be held at the British Empire Exhibition on May 30th and 31st, and will be opened by the Prime Minister. There are to be five sessions, the subjects of discussion being: (1) the Place of Science in Government; (2) Scientific Research in Relation to Industry; (3) Coöperation of Science and Labour in Production; (4) Science and the Human Factor; (5) Science in Educational Organisation. The fourth meeting will deal with Health and Psychology. Miss Margaret Bondfield, M.P., will preside, and the speakers include Sir Arthur Newsholme, Dr. C. S. Myers, Dr. Cyril Burt, and Miss May Smith. Copies of the programme and tickets of admission may be obtained by application to the Conference Secretary, 15, Gower-street, London, W.C.1.

MEDICAL EXAMINATION OF YOUNG PERSONS FOR FACTORY EMPLOYMENT.—The report of the Departmental Committee appointed by the Home Office to investigate this subject has now been issued (H.M. Stationery Office. Cmd. 2135. 6*d.*). The personnel of the Committee are Mr. Rhys J. Davies (chairman), Mr. Gerald Bellhouse, Dr. R. Wallace Henry, Mr. J. Moore Murray, Mr. Sydney W. Pascall, Mrs. Clara D. Rackham, Mr. W. J. Tout, and Mr. Arthur H. Wood, with Miss Rose E. Squire as secretary. The Committee have come to the conclusion that the present system is defective in the following respects: (*a*) The form of certificate is unsatisfactory in that it is negative, not positive; (*b*) the medical examination is, with certain notable exceptions, superficial and sometimes purely perfunctory; (*c*) re-examination during employment in a factory is unprovided for; (*d*) coördination with the school medical service and other public health services of the locality is lacking; (*e*) suitable accommodation in the factory for the medical examination is often absent and its provision is not compulsory. The more important of the recommendations for arrangements to be adopted in the future are that the age for examination should be raised from 16 to 18 years; that the form of the certificate should be positive instead of negative—i.e., it should be to the effect that the young person is physically fit for employment in the factory; and that the standard of examination, the form of certificate, and the nature of the conditions which may be attached to qualified certificates should be prescribed by the Home Office, which should supervise the work of the surgeon. A retaining fee should be paid to the surgeon out of public funds for the examination of factory processes, the making of an annual report, and re-examinations of employees when required. The fee for examination on entering employment in a factory should continue to be paid by the occupier. It is, moreover, recommended that the local authorities should at once be invited to submit schemes for taking over examination and certification of young persons, and that the aim in view should be that if the voluntary trial made by local authorities proves successful, the transfer of the whole of this work to the local authorities should be ultimately effected by order of the departments concerned.

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Parliamentary Intelligence.

HOUSE OF LORDS.

THURSDAY, MAY 15TH.

CRIMINAL RESPONSIBILITY (TRIALS) BILL.

Lord DARLING, in moving the second reading of the Criminal Responsibility (Trials) Bill, said its object was to alter the law in one important respect regarding trials where the insanity of the person accused was alleged. The Committee which was appointed by the late Lord Chancellor, Lord Birkenhead, to inquire into this question made a report some months ago, and he thought that action would have been taken by someone far more capable than he could pretend to be. But nothing had been done. He was perfectly well aware that there would be considerable opposition to the Bill he now brought forward, which might develop into a pitched battle. But it had often happened that some poor *franc-tireur* had begun what had in the end become a most important victory. The law had long been that insanity as recognised by the law of England entitled the accused person to escape capital punishment. Until 1883 the law was that in such a case, if the jury came to the conclusion that the accused was insane, the verdict was "Not guilty," because the accused was insane at the time of committing the crime; and therefore the accused was ordered to be detained during His Majesty's pleasure in a lunatic asylum. One of the improvements he desired to make involved the repealing of the statute of 1883, for the passing of which there were no good reasons. The 1883 Act altered the law in this respect: that if a person was proved to be insane the verdict was to be "Guilty of doing the act charged, but insane at the time." That was perfectly illogical and indefensible, and one of his proposals, which he hoped might induce their lordships to read the Bill a second time, if the rest had to be thrown over, was to bring back the law to what it was before this absurd statute was passed.

His reason for bringing in this measure was that there had long been a contest between the medical specialists and the law. These medical specialists had contended, and still contended, that directly they said that a person was insane in their sense he should be absolutely unpunishable, no matter what crime he may have committed. Some of them called themselves determinists; some of them contended that human beings were merely automatic creatures who acted with no control whatever over their motives or their actions. The law of England had never recognised that and he hoped never would. But it had recognised that a person might be insane in a legal sense and so entitled to a verdict of "Not guilty" where the act done, if done by a sane person, would involve a verdict of "Guilty" and a following punishment. It was so long since the law stood in that position that no doubt there must be some modification owing to modern research and recent knowledge. The noble and learned lord went on to refer to the murder in the year 1843 of Mr. Drummond, secretary to Sir Robert Peel, by a man named McNaghten. McNaghten was acquitted because insane, and he imagined that there was great public dissatisfaction with the result. As a result the judges were summoned to the House of Lords to give their opinions, and those opinions had been embodied in the Common Law of England ever since. Those opinions were expressed in certain statements known as the Rules in McNaghten's Case. Whenever a judge summed up in a case of murder he laid down the law in the terms of the advice then given. The two rules which mattered were these: The jury were told to inquire whether when he did the act which resulted in the death of the man the defendant knew the nature and quality of the act that he was doing; and to answer this further question: Did he know that the doing of the act was wrong? If so he was guilty. If he did not know this then he was not guilty on the ground that he was insane. Doctors of all descriptions had quarrelled with this and had said that it took no notice of a further possibility—that it simply dealt with the intellectual qualities of a man, and these were not exhaustive in the case of insanity. It was desired to add to the Rules in McNaghten's case another rule which he had ventured to propose in the present Bill. The McNaghten Rules were printed in the Bill, and it was desired to add to them that the accused was entitled to a verdict of not guilty on the ground that he was insane "if at the time the act was done or omission made which caused the death, he was suffering from such a state of mental disease as therefrom to be wholly incapable of resisting the impulse to do the act or to make the omission." That introduced what was known as the doctrine of irresistible impulse, which he recognised was a most controversial matter.

The noble lord, after quoting from pronouncements from high judicial and legal authorities on the subject, said he would like to ask Lord Sumner, who he understood was to move the rejection of the Bill, to state categorically whether he and those who thought with him recognised that there was actually such a thing as uncontrolled impulse due to disease of the mind. If they said "No" then they were in direct conflict with practically all the medical opinions of the day. If they said "Yes," then he asked further: Why have the man condemned; why not find that he was not guilty, because he could not control himself, and send him to a lunatic asylum? The Committee appointed by Lord Birkenhead on this matter were not psychologists or medico-psychologists. They were all practising lawyers with a good deal of experience in such matters. That Committee stated in their report: "It was established to our satisfaction that there are cases of mental disorder where the impulse to do a criminal act recurs with increasing force until it is, in fact, uncontrollable. . . . We appreciate the difficulty of distinguishing some of such cases from cases where there is no mental disease, such as criminal acts of violence or sexual offences where the impulse at the time is actually not merely uncontrolled, but uncontrollable. The suggested Rule"—(that was the Rule which he (Lord Darling) had put in this Bill)—"however, postulates mental disease; and we think that it should be made clear that the law does recognise irresponsibility on the ground of insanity where the act was committeed under an impulse which the prisoner was, by mental disease, in substance deprived of any power to resist." He simply asked their lordships to declare to be the law that which the Committee recommended should be made the law. The Rule as he would have it was already the law in Germany, Italy, South Africa, and Queensland. He would not trust juries to decide this or any other important question unless they received proper and adequate direction on points of law, but where they received such direction he believed juries were as sure as they could make sure of things in human affairs to come to a right verdict and to a verdict which satisfied the public conscience.

Lord SUMNER, in moving the rejection of the Bill, said it proposed to alter the law relating to the responsibility for crime committed by persons suffering from mental disease in a wholly novel and radical way. If their lordships gave the Bill a second reading they would give to this principle an approval which would be of the greatest gravity and which would make the Committee stage a wholly minor matter. Speaking for himself, he did not understand what was the supposed frame of mind in which a person did know the physical nature and quality of his act and did know that the act done was wrong and, notwithstanding, was suffering from such a state of mental disease that he was wholly incapable of resisting the impulse. He did not think it was right to add to the puzzles which juries had to solve by needlessly complicating the questions put to them in this sort of way. But since Lord Justice Atkin's Committee, adopting the view of a number of medical men who came before them, had said that it was established to their satisfaction that there were such cases he was prepared to accept their better opinion and agree that such cases there were.

As to why such a person should be condemned there were two or three answers. For 80 years such a person had been condemned if the jury had been of the opinion under the direction of the judge that he was not insane, and he did not notice in the report of the Committee or in the speech of Lord Darling that there had been any serious attempt made to show that actual injustice had ever occurred. Cases of mothers seized with an impulse to cut the throats or otherwise dispose of their offspring to whom they were normally devoted were not uncommon, but he never knew that there was any difficulty with regard to those cases. The wretched person no doubt was sentenced to death, but the exercise of the prerogative of mercy was as certain as that the sun would rise next day. Could it be that they wanted more than the exercise of the discretion of the judge for the purpose of dealing with cases which were not very numerous and in which they would not succeed in satisfying the medical profession? Their lordships who read the very interesting report of the Committee will find that there were two schools represented before it. One was that of an institution bearing the somewhat appalling title of the Criminal Responsibility Committee appointed by the Medico-Psychological Association of Great Britain, and they stood up for what he understood to be the view of alienists of the extreme school, the view that the law could not define insanity, that judges could not direct juries as to what was insanity, and that the only way in which these cases should be tried was to let the medical expert tell the jury what he thought about it, and then let the jury say for itself, out of its own head, whether a man was to be convicted or acquitted. There were even persons who went further than that, and said the inquiry ought not to take place in the presence of a jury, or by a jury, but in camera, by medical men specially qualified to pronounce whether minds were diseased or not.

The defence of insanity was constantly a speculative defence, raised on the chance of getting round the jury somehow. It was also in a large number of cases a rich man's defence. He greatly dreaded not that there would be an increase in the number of murders, but a considerable increase in the number of crimes of violence on women and children if a defence like this should be legal and should once have a success. Before they paid very much attention to the medical side of this question they ought to weigh against it the opinion and experience of the judges of England. He did not think there had been any serious dispute or criticism from the judges, and very little from the legal profession of the adequacy and substantial justice of the Rules in McNaghten's case. He was satisfied that criminals were deterred both by the certainty of punishment and the fact that it was speedy and that it would be a mistake to remove from these irresponsible beings that outside pressure which was exerted at present by the knowledge that if they failed to control what they ought to control they might find themselves punished by the law. Above all, they ought to consider not so much the fortunes or interests of a particular criminal, but the cause of the public at large.

Lord HEWART, Lord Chief Justice of England, in supporting the motion for rejection of the Bill, said he had not had an opportunity of consulting all his colleagues, the judges of the King's Bench Division, who were also the judges of the Court of Criminal Appeal, upon this matter. But he had consulted 12 out of 15. Of these 10 were like himself emphatically opposed to the measure, one was emphatically in favour of it, and one was doubtful. In cases where there was evidence of real mental disease antecedent to the commission of the alleged crime, and there was no evidence of a motive which might influence a sane person, juries had no difficulty in finding either that the accused did not appreciate the nature of his act or that he did not know it was wrong. But in cases where there was no such evidence of mental disease antecedent to the alleged crime mental experts might be found to say that the alleged crime itself afforded evidence that it was committed under irresistible impulse and that it might on that ground be inferred that there was mental disease. If that was so, the result might be to transfer to the medical profession the responsibility of the law in regard to a great number of ordinary criminals. Lord Darling had said that as medical science grew and as knowledge grew it was right that the criminal law should keep pace with it. Did his noble friend really mean that from time to time, as medical theory expanded, the rules of the criminal law were to be modified? Was it not far safer to say: Let medical science come with new meaning, with a changed meaning. The law would, however, still ask: Is this person to be excused because he did not know what he was doing, or if he did, because he did not know that what he was doing was wrong?

The LORD CHANCELLOR (Viscount HALDANE) said that almost invariably if a proposition was brought before the jury that the prisoner was through mental disease incapable of resisting the impulse to commit the crime somebody would be found to come forward and give expert evidence that a state of mental disease existed. He was not saying a word against the advance of medical science, which had been so notable during the last few years, or against the advantages of bringing psychology to bear where it could be useful. These scientists were excellent servants, but they were not always reliable masters. We had not recognised in this country the passion crime which was recognised on the Continent, and he hoped we should not recognise it. For his part, having given all the thought he could to the subject and read the admirable report of the Committee through and through, he could not bring himself to see that it would be a good addition to the law to introduce this new proposition. He was therefore unable to support the Bill.

Lord DUNEDIN, formerly Lord Justice-General of Scotland, and Viscount CAVE, formerly Lord Chancellor, also opposed the Bill.

Lord DARLING intimated that as his proposal had not been supported in debate he did not feel justified in asking that the Bill should be read a second time.

Lord Sumner's motion for rejection was formally agreed to.

Panel Doctors' Remuneration.

The National Insurance (Cost of Medical Benefit) Bill passed through Committee and was reported without amendment.

TUESDAY, MAY 20TH.

Tramways and Waterloo-road Hospital.

On the motion for the second reading of the London County Council (Tramways and Improvements) Bill,

Lord DENMAN moved that it be an instruction to the Committee to strike out from the Bill all powers relating to the construction of a short line of tramway, the proposed route of which passes the Waterloo-road Hospital. He said that this hospital was doing good work and the noise created by passing trams might have an injurious effect upon the patients, as had been the case in regard to St. Thomas's.

Lord MONK BRETTON said that he had a great deal of sympathy with the suggestion that hospital patients should be kept as quiet as possible, but there were ten large hospitals in London, including St. Thomas's, which had trams running past them. It was an unreasonable thing for Lord Denman to propose that this part of the Bill should be struck out after the measure had been passed by the House of Commons and when it was promoted with the concurrence of every party on the London County Council.

The Earl of DONOUGHMORE, Chairman of Committees, said he would not feel justified in asking their lordships to do otherwise than follow the usual course of sending this Bill to a Committee. If the worst came to the worst no doubt this hospital could be just as well carried on elsewhere. He did not wish to pronounce upon the merits of the case, but he hoped that Lord Denman would be satisfied with having called special attention to this matter and would allow the usual course to be followed.

Lord BUCKMASTER and Lord MONTAGU OF BEAULIEU supported the proposed instruction.

On a division the instruction to the Committee was carried by 57 votes to 35.

The National Health Insurance (Cost of Medical Benefit) Bill was read a third time and passed.

HOUSE OF COMMONS.

WEDNESDAY, MAY 14TH.

Vivisection (Prevention of Public Expenditure) Bill.

Lieut.-Commander KENWORTHY, in asking leave to introduce a Bill to prevent the payment out of public funds of moneys for experiment on living animals, said that the measure in no way interfered with experiments being carried out by private experimenters under licence as at present, but a large sum of money was being spent by the Ministry of Health in subsidising these experiments. Last year, as far as he could gather, they spent £130,000, which was much too large a sum, and objectionable for many reasons. It would be much more valuable if this money could be spent on providing milk for expectant mothers, and in helping crêches in poor districts and for other useful purposes. He did not intend to interfere with bacteriological experiments or with ordinary medical research experiments, but only as regards these particular experiments.

Dr. SPERO submitted that more money rather than less should be spent on animal experiments. In such experiments animals were under an anæsthetic and felt no pain whatever. Insulin had to be tested on rabbits before it could be given to human beings. Without experiments on animals, therefore, there would be a number of diabetic patients who would not be alive. Adrenalin, which was used for hæmorrhage, pituitary during childbirth, and a number of other preparations were all of animal extraction. No doubt his hon. friend in the years to come would give up his anti-vivisectionist views and resort to the rejuvenating properties of monkey glands. Again, some drugs had to be standardised, and that must first be carried out on animals. The best-known drug in that category was salvarsan, used in the treatment of syphilis. If medical men were denied standardisation they would be unable to treat with safety that terrible disease. The national milk-supply was kept free from tuberculous bacilli by inoculating guinea-pigs with suspected milk. He would remind the House of the self-sacrificing work carried on by research workers. If they were denied animals they would be forced to experiment on themselves.

Leave was granted to bring in the Bill, which, beside Lieut.-Commander Kenworthy, is backed by Mr. Foot, Mr. Scrymgeour, Mr. Trevelyan Thomson, Mr. Ayles, Mr. Mills, Rear-Admiral Sueter, Mr. Wignall, Sir P. Richardson, and Mr. Hogge.

The Bill was read a first time.

Cost of Insurance Administration.

Mr. FOOT asked the Minister of Health if he was able to state what was the cost of administration for national health insurance cases in England, Scotland, and Wales respectively. —Mr. WHEATLEY replied : The total cost of administration of national health insurance in the year 1922 (including expenditure by all Government departments in connexion with the service) was as follows : England, £4,012,000 ; Scotland, £547,000 ; Wales, £288,500. There are no statistics available as to the cost of administration per case, if, as is assumed, the hon. Member means by a case an individual insured person who is actually in receipt of one or other of the benefits provided under the Acts. The total cost of administration given above represented in the case of both England and Scotland approximately 6*s*. 4*d*. per insured person per annum, and in the case of Wales approximately 7*s*., and was in each case about 13 per cent. of the total receipts from all sources. There has been a reduction as from Jan. 1st, 1924, in the maximum amount allowed to be appropriated for the administration expenses of approved societies.

Water-supplies in Rural Areas.

Mr. ERNEST BROWN asked the Minister of Health whether any regular inspection of water-supplies in rural areas was carried out by his department.—Mr. WHEATLEY replied : Regular inspection is not carried out by my department, because the primary duty of looking after water-supplies rests with the local authorities, but a general survey is at present being made.

Infectious Disease Grants.

Mr. HARDIE asked the Minister of Health what was the amount of the yearly grants given by the Government for the treatment of infectious diseases ; and the yearly amount rated for by local authorities for the same purpose.—Mr. WHEATLEY replied : The grants paid during the year ended March 31st last for the treatment of infectious diseases in England and Wales amounted to approximately £1,607,000. These grants were mainly in aid of the cost of the treatment of tuberculosis and venereal diseases, no grant being available generally for the treatment of the ordinary infectious diseases. The total amount paid out of the rates for the treatment of infectious diseases generally was approximately £5,088,000 in the financial year 1921–22, the last year for which complete returns are at present available.

The Health of the Navy.

Mr. CECIL WILSON asked the Parliamentary Secretary to the Admiralty for what year the last report on the health of the Navy had been published ; and for what year the next report would be published, and when.—Mr. AMMON replied : The report for 1921 has just been published. It is expected that the next report (for the year 1922) will be published by the end of the present year.

Maternity and Child Welfare Grants.

Lieut.-Commander KENWORTHY asked the Minister of Health why there was a decrease in this year's estimates on the grants for maternity and child welfare (Class VII., Vote 1, Subhead G.1) of £70,000 in the case of England, and of £2000 in the case of Wales, as compared with last year's estimates ; and whether every encouragement was being given to local authorities and voluntary agencies to help expectant and nursing mothers, and young children, under the Maternity and Child Welfare Act, 1918, and the Education Act of 1918.—Mr. WHEATLEY replied : As regards the first part of the question, the explanation is that the actual expenditure last year of local authorities and voluntary agencies for maternity and child welfare proved to be considerably below the provision made in the estimate for that year. The provisions made for grants in the estimate for this year is substantially in excess of the actual amount of grants paid last year, and includes the necessary provision for development of this service. The answer to the second part of the question is "Yes" so far as activities under the Maternity and Child Welfare Act, 1918, are concerned. Any question affecting the Education Act of 1918 should be addressed to my right hon. friend, the President of the Board of Education.

THURSDAY, MAY 15TH.

Final Pension Awards.

Sir CHARLES CAYZER asked the Minister of Pensions whether, in the case of men called up at the outbreak of war and who, having completed four years' continuous war service, were granted pensions on leaving the Army, especially men who were passed A 1 on mobilisation and left the Army B 3, and who had had their pensions upheld by three successive medical boards, he would grant these men life pensions, it being quite clear that in the case of men passed A 1 on mobilisation and B 3 on discharge the causes of their disabilities were entirely due to war service ; and whether, in the case of men who had successfully appealed against a final allowance, he would empower the Appeals Tribunal Board to assess the damages immediately instead of putting the men forward for a further medical board, seeing that the policy suggested would save the country annually a very large sum of money in administrative expenses.—Mr. F. O. ROBERTS replied : The case of every officer or man who has been on the pension list for four years or more has to be considered for a final award under the provisions of Section 4 of the War Pensions Act of 1921. Wherever the case is found to be suitable for a final award, such an award is made. I am glad to say that in about 250,000 cases final awards of life pensions have already been granted. With regard to the last part of the question, I may point out that wherever the appeal tribunal are able to assess compensation finally they do so, and their finding is acted upon by my department. It is only in cases where they are uncertain as to the prognosis of the case that they set aside the award made by the Ministry. The suggestion made by the hon. Member would not be practicable without legislation, and would very frequently not be in accordance with the best interests of the man concerned.

Treatment of War Neuroses.

Sir **VICTOR WARRENDER** asked the Minister of Pensions whether it was proposed to extend the present Ministry of Pensions hospital at Grantham into a hospital for neurasthenics.—Mr. **F. O. ROBERTS** replied: Patients suffering from neurasthenia have for some time past been admitted to this hospital for treatment. It is proposed, when accommodation is no longer required there for medical and surgical cases, to use the institution solely for neurological cases.

Regulation of the Use of Codeine.

Major **CHURCH** asked the Home Secretary for what reason codeine was omitted from the list of narcotics to which the Dangerous Drugs Act applied; and whether His Majesty's Government would advocate the inclusion of this drug in any forthcoming international convention for the restriction of the traffic in narcotics.—Mr. **HENDERSON** replied: The Dangerous Drugs Act was passed in order to give effect to the International Opium Convention of 1912, and codeine is not one of the drugs included in that Convention. I am advised that codeine is not generally regarded by medical opinion as a dangerous drug of addiction.

Bacillus of Foot-and-Mouth Disease.

Mr. **GRAHAM WHITE** asked the Minister of Agriculture if he had any information regarding the reported discovery of the bacillus of foot-and-mouth disease announced by Prof. Paul Frosch.—Mr. **BUXTON** replied: A communication was made recently by Prof. Frosch to a scientific society in Berlin, but the Professor did not fully disclose his method of procedure, and it is therefore impossible for others to confirm his experiments. It is understood, however, that full details will not be long delayed.

Tuberculosis in the Navy.

Sir **BERTRAM FALLE** asked the Parliamentary Secretary to the Admiralty the number of men invalided during the last 12 months from His Majesty's Navy through tuberculosis; how many of these were considered attributable to service; and how the decision as to whether tuberculosis was attributable to or aggravated by service was arrived at.—Mr. **AMMON** replied: The number of men invalided during the year 1923 for tuberculosis was 143. The number of attributable cases was three, apart from cases (if any) claimed to be due to war service. The latter would be dealt with by the Ministry of Pensions. The following method of arriving at a decision as to attributability to or aggravation by service is adopted when considering cases arising during the post-war period:—

Pulmonary Tuberculosis.—Attributability is only given in such cases arising: (1) By direct contact with another case, such as might occur in a sick berth rating from nursing, or from sleeping adjacent to a case; (2) from extraordinary exposure, or exertion on duty, such as war. Aggravation is given: (1) Where the medical history of the case has shown a definite tendency to lung disease and a sufficient continuity of such disease; (2) where there is a record of service in small craft, where the ventilation and cubic space are limited; (3) where the disease arises under climatic conditions which amount to more than the ordinary exposure incidental to naval service.

As regards other cases of tuberculosis, such as those arising in joints and localised organs, attributability or aggravation is only given in cases where there is definite evidence of injury to the part sustained on duty and where it is considered that the injury has caused a lighting up of the disease.

MONDAY, MAY 19TH.

Death-rate in Gold Coast Colony.

Mr. **JOHN HARRIS** asked the Secretary of State for the Colonies what was the death-rate by sickness and accident, respectively, in the gold mines of the Gold Coast Colony for the last complete year.—Mr. **THOMAS** replied: The death-rate from accident for the last complete year for which statistics are available—viz., 1921—was 1·39 per 1000 labourers daily employed. It has not been the practice to furnish figures of the death-rate from sickness. My predecessor, some time ago, directed that such statistics should be furnished, but I have not yet been able to obtain complete and accurate figures. The information which I have obtained, however, leads me to doubt whether the conditions of labour at the mines are satisfactory, and I propose to discuss the whole matter with the Governor at an early date.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

THE ROYAL SOCIETY, Burlington House, W.
THURSDAY, May 29th.—4.30 P.M., Prof. D. M. S. Watson, F.R.S.: The Structure, Evolution, and Origin of the Amphibia. (Croonian Lecture.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, May 26th.

ODONTOLOGY: at 5.30 P.M.
At the Royal College of Surgeons, by kind permission of the College.
Annual General Meeting:
Election of Officers and Council for 1924–25.
The Odontological Section of the Museum will be open for inspection by Members, and the Curator, Sir Frank Colyer, will show the specimens which have been recently added.

Tuesday, May 27th.

MEDICINE: at 5.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.

Wednesday, May 28th.

COMPARATIVE MEDICINE: at 5 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.
Paper:
Dr. F. E. Crew: Achondroplasia in Man and Animals, with Special Reference to the "Bulldog" Calf.
A discussion will follow, to be opened by Mr. Leslie Pugh.

Thursday, May 29th.

UROLOGY: at 8.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.
Pathological Evening:
Members are requested to give early notice to Mr. Girling Ball, 77, Wimpole-street W., of any specimens they wish to show.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
FRIDAY, May 30th.—8.40 P.M., Mr. Kenneth Walker: Paper on Epididymitis, preceded by a Demonstration of Clinical Cases, and followed by a Discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, May 26th, to Saturday, May 31st.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL. Special intensive course (last week).—LONDON LOCK HOSPITAL. Clinical work daily. Lectures at Dean-street as follows: Mon., 5 P.,M. Mr. Gibbs: Antenatal and Postnatal Treatment of Syphilis; Tues., 2.30 P.M., Mr. McDonagh: Microscopical Demonstration, Leucocytozoon Syphilidis; Thurs., 4.30 P.M., Mr. Lawrence Abel: Treatment of Chronic Gonorrhœa in the Male.—MAUDSLEY HOSPITAL. Mon., 3.30 and 5.30 P.M., Dr. Bernard Hart: The Psychoneuroses; Tues., 4.30 P.M., Sir Frederick Mott: Brain Syphilis, its Symptomatology and Treatment; Wed., 2.30 P.M., Dr. Mapother: Demonstration in Clinical Psychiatry.—PRINCE OF WALES'S GENERAL HOSPITAL. Special intensive course in Medicine and Surgery (last week).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, May 26th.—12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Dept. 2 P.M., Mr. Simson: Diseases of Women.
TUESDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 11 A.M., Mr. Endean: Venereal Diseases. 2 P.M., Dr. Burrell: Medical Out-patients.
WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Pernet: Skin Dept. 4.15 P.M., Dr. Owen (Lecture): Infantile Disorders in the First Ten Days of Life.
THURSDAY.—11 A.M., Dr. Archer: Chemical Pathology. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 4.15 P.M., Mr. Donald Armour (Lecture): Head Injuries.
FRIDAY.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children, 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M. In-patients, Out-patients, Operations, Special Departments.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.
TUESDAY, May 27th.—5 P.M., Dr. Sequeira: Lupus Erythematosus.
THURSDAY.—5 P.M., Dr. Graham Little: Dermatitis Herpetiformis.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

Post-graduate Course.

Monday, May 26th.—12 noon, Dr. Greenfield: Lecture, Paths of Infection of Central Nervous System. 2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P M., Dr. Aldren Turner: Clinical Lecture.

Tuesday, May 27th.—12 noon, Dr. Walshe: Lecture on Anatomy and Physiology of Nervous System. 2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Lecture, Disseminated Sclerosis.

Thursday, May 29th.—12 noon, Dr. Walshe: Lecture on Anatomy and Physiology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Lecture, Clinical Disorders of Muscle Tone.

Friday, May 30th.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Clinical Lecture.

Applications should be addressed to the Secretary, Medical School, National Hospital for the Paralysed and Epileptic, Queen-square, London, W.C. 1.

J. G. Greenfield, Dean.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

(At 4.30 P.M.)

Monday, May 26th.—Mr. Aubrey Goodwin: Curettage, its Uses and Abuses.

Tuesday.—Dr. C. E. Sundell: Nephritis in Children.

Wednesday.—Dr. J. Browning Alexander: Treatment of Gastric and Duodenal Ulcer.

Thursday.—Dr. A. J. Whiting: Vagus Effects on the Heart as Met with in Practice.

Friday.—Mr. H. W. Carson: Peritonitis—Treatment of.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, May 29th.—4 P.M., Dr. Thursfield: Acholuric Jaundice.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

Monday, May 26th.—(At the Children's Hospital.) Dr. H. Armstrong: Clinical.

Tuesday.—(At the Southern Hospital.) Dr. Macalister: Chronic Dyspepsia.

Wednesday.—(At the Northern Hospital). Dr. L. Cunningham: Rheumatic Fever.

Thursday.—(At the Stanley Hospital.) Mr. Morrison: Surgical Cases.

Friday.—(At the Royal Infirmary.) Dr. Matthews: Exhibition of Blood Films.

BRISTOL UNIVERSITY POST-GRADUATE DEMONSTRATIONS.

Wednesday, May 28th (at the Hereford General Hospital.)—3.30 P.M., Dr. O. C. M. Davis: Defective Dieting as a Cause of Children's Disorders.

Appointments.

Alexander, T. H. W., M.B., B.Ch. Edin., has been appointed Medical Referee under the Workmen's Compensation Act for Elgin and Nairn.

Bowes, G. K., M.D. Oxf., D.P.H., Asst. Medical Officer, Birmingham.

Caird, A. J., M.B., Ch.B. Edin., Hon. Asst. Surgeon to the Cumberland Infirmary.

Falconer, K., M.B., Ch.B. Glasg., Medical Officer of Health for Drolysden.

Lawson, Miriam A., L.R.C.P., M.R.C.S., Resident Medical Officer, St. Mary's Hospital for Women and Children.

King's College Hospital: East, C. F. T., B.M., B.Ch. Oxf., M.R.C.P. Lond., Radcliffe Travelling Fellow of the University of Oxford, Medical Tutor, and Junior Physician on the staff; Livingstone, J. L., M.B., B.S. Lond., Sambrooke Medical Registrar; Perkins, A. C. T., M.R.C.S., L.R.C.P. Lond., Second Casualty Officer; Townsend, H. S., M.R.C.S., L.R.C.P. Lond., House Anæsthetist; Lane, C. R., M.B., B.Ch., Resident Asst. Clinical Pathologist; Brockington, F., M.B., B.S., Smith, A. B., M.B., B.S., and Sheldon, W. P. H., M.R.C.S., L.R.C.P. Lond., House Physicians; Strange, F. O. T., M.R.C.S., L.R.C.P. Lond., Sommerville, A. C., M.R.C.S., L.R.C.P. Lond., and Connan, P., M.R.C.S., L.R.C.P. Lond., House Surgeons; Kohnstam, G. L. S., M.R.C.S., L.R.C.P. Lond., House Surgeon and Assistant House Anæsthetist; Edwards, H. C., M.B., B.S., House Surgeon to Orthopædic Department; Nicholson-Smith, E. M., M.R.C.S., L.R.C.P. Lond., Obstetric House Surgeon; Acheson, P. M., M.R.C.S., L.R.C.P. Lond., House Surgeon, Aural and Throat Depts.; Cave, E. H. P., M.R.C.S., L.R.C.P. Lond., Resident Radiologist; Crossley, J. C., L.D.S., House Surgeon, Dental Department.

Vacancies.

For further information refer to the advertisement columns.

Aden Settlement.—Executive Health O. Rupees 800 per mensem.
Bolingbroke Hospital, Wandsworth Common, S.W.—Hon. Dentist.
Bolton Infirmary and Dispensary.—Res. Surg. O. £250. Two H.S.'s. £150. Asst. H.S. £100.
Brighton, Lady Chichester Hospital.—Res. M.O. £100.
Brighton, Royal Sussex County Hospital.—Hon. Second Electro-Therapeutist.
Bristol, Southmead Hospital.—Second A.M.O. £200.
Buxton, Devonshire Hospital.—Bacteriologist. £400.
Cairo, Egyptian Government School of Medicine.—Prof. of Biology. L.E.900–1140.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Carlisle, Cumberland Infirmary.—Jun. H.S. £150.
Charing Cross Hospital, W.C.—Asst. S. to Ear, Nose, and Throat Dept.
Cornwall County Council.—Temp. Tub. O. £50 for one month.
Dudley, Guest Hospital.—Asst. H.S. £150.
Edinburgh University.—Lecturer on Diseases of Tropical Climates.
Grimsby and District Hospital.—Jun. H.S. £125.
Heywood Borough.—M.O.H. £800.
Holland County Council, Lincolnshire.—Asst. County M.O. £600.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each £50.
Hull Royal Infirmary.—Cas. H.S. £130.
King Edward VII. Sanatorium, Midhurst, Sussex.—Med. Supt. £1000.
Lancashire County Council.—Asst. County M.O. £800.
L.C.C. Mental Hospitals.—Seventh Asst. M.O. £440.
London Hospital Medical College.—Jun. Demonstrator of Physiology.
London Temperance Hospital, Hampstead-road, N.W.—R.M.O. £200.
Manchester, Ancoats Hospital.—H.S. £100.
Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £250.
Manchester City.—M.O. £632 7*s.* 8*d.*
Middlesex Hospital, W.—Physn. to Dept. for Dis. of Nervous System.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Registrar. £200.
North Middlesex Hospital, Edmonton, N.—Asst. M.O. £200.
Oxford, Radcliffe Infirmary and County Hospital.—H.P., H.S., Cas. H.S., and Res. Accoucheur. Each £120.
Preston, Lancs, County Mental Hospital, Whittingham.—Locum Tenens M.O. £8 8*s.* per week.
Preston Royal Infirmary.—R.S.O. £230. And H.S. £200.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstet. S.
Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. P.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Dental S. £300.
Rochester, St. Bartholomew's Hospital.—H.P. £200.
Royal Chest Hospital, City-road, E.C.—P.
Royal Free Hospital, Gray's Inn-road, W.C.—H.P., H.S., Asst. Cas. O., Obstet. H.S., &c. Each £50. Cas. O. £100.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Clin. Asst. 100 guineas.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. and H.S. Each £100.
St. Bartholomew's Hospital, E.C.—Radiologist.
South London Hospital for Women, Clapham Common, S.W.—Asst. P.
Stirling District Mental Hospital, Larbert.—Third Asst. M.O. £250.
War Memorial Hospital, Enfield, Middlesex.—Hon. Radiologist.
West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., Res. Cas. O., and Med. Reg. Each £100.
Wigan Infirmary.—Third H.S. £150.
Windsor, King Edward VII. Hospital.—Jun. H.S. £140.

Births, Marriages, and Deaths.

BIRTHS.

Goode.—On May 13th, at Bootham, York, the wife of Henry Norman Goode, M.C., M.B., F.R.C.S.E., of a son.

Martin.—On May 14th, at Westbourne-gardens, W., the wife of E. Kenneth Martin, M.S., F.R.C.S., of Wimpole-street, of a daughter.

Rushworth.—On May 12th, at Orchard Corner, Walton-on-Thames, the wife of Arthur Norman Rushworth, M.R.C.S., L.R.C.P., of a daughter.

Shaw.—On May 14th, at Coronation-street, Barnstaple, Devon, the wife of Simeon Cyril Shaw, F.R.C.S., M.B., B.S., of a son.

MARRIAGES.

Fox—Gibson.—On April 23rd, at St. Peter Port Parish Church, Guernsey, William Barton Fox, B.A., M.B., B.Ch. (T.C.D.), to Doris Margaret Gibson, M.B., B.Ch. Edin., elder daughter of Dr. and Mrs. E. V. Gibson, Paradis," Grange-road, Guernsey.

DEATHS.

Foulds.—On May 9th, after an acute illness, Greta Maryanne Foulds, beloved wife of Dr. Francis Henry Foulds, of Severn House, Droitwich, aged 50 years.

McKinlay.—On May 17th, at Southsea, suddenly, Deputy Inspector-General Archibald McKinlay, R.N. (retired).

Scowcroft.—On May 17th, at St. Ann's Cottage, St. Ann's-road, Cheadle, Cheshire, Walter Scowcroft (late Medical Superintendent of Cheadle Royal, Cheshire), in his seventieth year.

Widegren.—On May 18th, at Grosvenor-place, Matthias W. E. Widegren, M.R.C.S., L.R.C.P., Knight of the Swedish Order of Vasa, aged 62.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

OUR CLOTHES AND HEALTH.

AT a meeting of the Maternal and Child Welfare Group of the Society of Medical Officers of Health held on May 15th, with Dr. H. Scurfield in the chair, Dr. Leonard Hill delivered a lecture, illustrated by lantern slides, on clothing and open-air treatment. The lecturer began by describing the properties of different cloth fibres and showed that in maintaining the warmth of the body the essential factor was not the nature of the fibre but its ability to retain air. This was brought about largely by the style of weaving. Air was a very bad conductor of heat, and the warmth of the body was retained by particles of air trapped in the meshes of the garment. He showed the results of his experiments with his instrument the katathermometer, which proved how the maximum amount of heat was to be retained when cellular clothing was covered on the outside with waterproofed or air-proofed material, thus preventing the warm layers of air from being carried away from the body. This principle was put into practical application in the clothing of airmen and Arctic explorers. With regard to wet clothes, Dr. Hill showed that wool retained the maximum of warmth in the body, as wool fibres when wet did not collapse as cotton and silk did. He made reference to some experiments which had been done at the instigation of the Board of Trade to test the most suitable provision to make for people who might be shipwrecked. The results of these experiments were that the essential factor in preserving life was warmth and that this could best be achieved by putting on some waterproof covering over the ordinary clothes whether these were wet or no. Dr. Hill then went on to show the effect of colour on heat retention. As is well known, white radiates and breaks up heat and light rays which are absorbed by black. He gave illustrations of several interesting experiments which went to prove this. The ideal clothing for tropical wear—as, for example, the wide white flapping garments of the Arabs—was that in which air was allowed to circulate freely throughout the body and which permitted the perspiration to evaporate. He showed that 1 g. of water in evaporating got rid of 600 calories. The white dweller in the tropics required to achieve pigmentation before he was able to withstand the sun's rays. Dr. Hill showed how the short ultra-violet rays of the spectrum had a very small penetrating power, so small indeed that though their bactericidal power was great the presence of one bacterium in front of another was sufficient to protect the lower one. Pigmentation of the skin is caused by the longer ultra-violet rays. Dr. Hill described the experiments which he was carrying out to determine the daily amount of ultra-violet rays in sunlight. His scale showed that half a degree was emanated during 24 hours when the day is cloudy, whereas 10 degrees were given off in the same period when the sun has been shining brightly. The lecturer urged the wider application of heliotherapy, and showed pictures of the work which is being done by Sir Henry Gauvain and Dr. Rollier. Ultra-violet light comes not only from direct sunlight but from the blue sky and is reflected from bright clouds. He hopes that cities will take up the task of estimating the daily amount of ultra-violet light in the atmosphere and will thus come to realise what a tremendous loss is sustained through the pollution of the atmosphere in large cities and will be shamed into coping with the smoke nuisance. Dr. Hill then gave experimental evidence to show the immense value of sunlight in the cure and prevention of rickets. Where, as in this country over large sections of the year sunlight was not very abundant, these curative rays could be obtained by means of the mercury-vapour quartz lamp. Such lamps were now installed in several London and provincial therapeutic centres. Dr. Hill advocated that children should always wear the minimum amount of clothing, and stated that even small babies were far less liable to take cold than was commonly supposed.

PUBLIC HEALTH IN CEYLON.

A REPORT on the affairs of the colony for the year 1922, prepared by Mr. C. H. Collins, second Assistant Colonial Secretary, has just been presented to Parliament. It includes a lengthy section devoted to vital statistics, public health, and kindred matters. From this we gather that, estimated on the basis of the census of March 18th, 1921, the population of the island, exclusive of the military and shipping on Dec. 31st, 1922, was 4,621,147, made up of 9100 Europeans, 30,250 Burghers and Eurasians, 3,087,308 Cingalese, 1,134,083 Tamils, 288,644 Moors, 13,721 Malays, and 26,453 others. The birth-rate of the year was 39·4 per mille and the death-rate 27·8 per mille of the estimated population. The mortality of children under 1 year of age amounted to 33,803, and corresponded to 26·7 per cent. of the total deaths during the year. The death-rate from some of the principal causes per million of the population is given in the subjoined table :—

Pyrexia	4422	Ankylostomiasis	410
Infantile convulsions	3028	Premature birth and congenital defects	363
Diarrhœa	2127	Puerperal septicæmia	338
Pneumonia	1640	Bronchitis	290
Phthisis	681	Enteric fever	119
Dysentery	551	Cancer	101
Influenza	525		
Malaria and malarial cachexia	449		

The deaths attributed to influenza during the year numbered 2395, the lowest total recorded since the pandemic broke out in 1918, when it was 19,092. The deaths from pneumonia, which since the outbreak of the influenza pandemic have been fairly high, amounted to 7479, an increase of 771 over the previous year and of 813 over 1920. But compared with the years 1918 and 1919 the mortality from pneumonia also is considerably less. It is likely that the increase over the previous two years of the deaths from pneumonia is due to a slight recrudescence of influenza in the second and third quarters of the year. The number of deaths from plague registered in the year was 143, of which only 23 were females. It is now nine years since the plague broke out in the island, and within this period there have been only two years—viz., 1915 and 1919—in which the mortality from the disease was less than in this year. As usual, by far the greater number of deaths occurred within the municipality of Colombo. There were 40 deaths registered from small-pox, and 4 from cholera. To accidents and other affections produced by external causes were attributed 1982 deaths ; 471 of the accidental deaths were returned as due to fall from trees, and of the number, strange as it may appear, 5 were females. Drowning was ascribed as the cause of death in 413 cases, and deaths from burns numbered 207 (27 being ascribed to the bottle lamp). 167 males and 82 females died from snake-bite. The death-rate per million persons from homicide was 48 and is comparatively high. Suicide accounted for the deaths of 167 males and 65 females. Parangi (frambœsia) is still prevalent in many parts but is less common than it was some years ago, the position having been very much improved by the restoration of many village tanks and the establishment of dispensaries. Special efforts have been made of late years to deal with the disease, which is treated with salvarsan in many district hospitals and three special itinerating medical officers have been appointed for work in selected areas. Special mention may be made of the very praiseworthy work of a private medical practitioner who has treated a very large number of parangi patients free in a number of villages in the North-West Province, using drugs supplied by Government with encouraging results. The campaign against ankylostomiasis, carried on conjointly by the Rockefeller Foundation and the Ceylon Government, has been continued during the year, and arrangements were made for training a number of inspectors for work in this department. All parts of Ceylon are well supplied with hospitals and dispensaries, most of which have been provided and are supported by the public funds. The island possesses a lunatic asylum which contained 1097 inmates on Dec. 31st, 1922, and two leper asylums, one at Hendala, which contained 455 patients at the end of the year, and the other at Mantivu with 116 lepers. A home for incurables of 80 beds is administered by a committee of Government officials and representatives of the public. There is a tuberculosis sanatorium at Kandana in the Western Province and 91 other Government hospitals, including a hospital for chronic cases of tuberculosis equipped with modern hospital furniture and surgical appliances. In addition to the hospitals there are 472 central and branch dispensaries, including a central institute in Colombo for tuberculosis cases, this last being fitted up with an X ray apparatus. The owners of estates have provided 64 estate hospitals, which received a rebate on export duty, and 542 estate dispensaries received drugs free from Government to the value of 50 cents per labourer per annum. The general scheme in contemplation for the rebuilding of the Ceylon Medical College remains deferred. The full course of training at the college is five years for the medical students and two years for the apothecary students. A diploma in medicine, surgery, and midwifery (which can be registered in the United Kingdom) is granted to the successful medical students. The apothecary students are employed by the Government after they qualify in the final examination. Colombo possesses a bacteriological institute, a Pasteur institute, a general hospital of 711 beds, an ophthalmic hospital, a lying-in home, a hospital for women and children, and a hospital for infectious diseases. There are special dispensaries at Kandy and Galle for the treatment of eye diseases. There is a marked variation in climate between the different parts of Ceylon. In the low country, with a mean temperature of the order of 80° F., a noticeable feature is the small range of both temperature and pressure. There is, however, wide divergence between the moist conditions in the south-west of the island, where the average annual rainfall varies from 100 to 200 inches, and the dry zone areas of the north, north-west, and south-east. Altitudes up to 8200 feet occur inland, and there the temperature is cooler and shows a bigger range. There is a corresponding change in vegetation, and the conditions are altogether more akin to those in the temperate zone. The death is recorded with regret of Dr. Alan Kidd, superintendent of the General Hospital, and it is mentioned that early in the year Dr. P. J. Kelly, registrar of the Medical College, was appointed Surgeon-General of British Guiana.

HEALTH CONDITIONS IN SWAZILAND AND THE SEYCHELLES.

Swaziland.

THE census taken in May, 1921, showed that the European population in the Protectorate was 2205, representing an increase of 103·6 per cent. since the 1911 census. The native Bantu population amounted to 110,295, an increase of 5·34 per cent. in the ten years. During 1922 the general health of the territory was fairly good. Small-pox was epidemic in a mild form. The number of deaths from the disease has been small. Vaccination work has been carried out and the bulk of the native population has been successfully vaccinated. There has been very little malaria during the year, and cases of enteric were rare. Syphilis continues to be a troublesome disease amongst the native population, but every effort is being made to deal with it. Only a few cases of influenza—of a mild type—occurred during the year. Out of 148 cases admitted to the hospital there were three deaths; 15,722 out-patients were treated. Swaziland is divided geographically into three longitudinal regions of roughly equal breadth, running from north to south, and known locally as the high, middle, and low or bush veld. The climate of the high veld has been likened to that of the south of France. The air is bracing and invigorating; light frosts are prevalent during the months of June and July. The mean temperature in winter is 57° F. The summer is pleasantly warm. The absolute maximum over a long number of years is 101°, while the mean temperature in summer is 67°. The rainfall is good, the average recorded at Mbabane over 19 years being 50·49 inches. The middle veld is well watered by streams rising in the ranges on the west. Lying as it does some 2000 feet below the mountains, the summer temperature of this area is warm and humid, but in winter is cool and refreshing. The mean temperature in summer is 72° and in winter 62°. Frost at times occurs in the valley streams, but is seldom found elsewhere. The rainfall recorded at Bremersdorp over 20 years averages 34·35 inches. East of and parallel to the middle veld lies the bush veld, about 20 miles in width and running north and south through the whole area of the territory. Many streams come down from the high veld and Drakensburg Range. These streams converge in the bush veld into five rivers. But for these this area is not well watered. The rainfall recorded at Natalie Ranch over eight years averages 26·64 inches. The high veld is free from malaria, which is, however, prevalent in the low veld and in a slight degree in the middle veld during some of the summer months. The malaria is not of a virulent type and is easily avoided by taking the precautions ordinarily considered necessary in any subtropical country.

Seychelles.

The Seychelles Islands are situated between the parallels of latitude 4° and 5° S.; the estimated total number of square miles comprised in the group and in the dependencies is 156½. The number of islands under the Seychelles Government is 90. Mahé is the largest and most populous, and is distant from Mauritius 934 miles, from Madagascar 600, and from Zanzibar 970 miles. It is mountainous, fertile, and extremely healthy. The total population of the colony on Dec. 31st, 1922, was estimated at 25,176, an increase of 653 since April, 1921. There were 108 marriages during the year, as compared with 119 in the previous 12 months. Births numbered 753, which corresponds to a rate of 30·47 per 1000. The deaths amounted to 344, or 13·92 per 1000. This is the lowest local record for many years and may be attributed to the fact that there were no epidemics of any infectious or contagious disease during the year. In spite of its proximity to the equator, Seychelles is reputed to be one of the most healthy of the British possessions within the tropics. Its climate is mild and equable. The maximum shade temperature rarely exceeds 86° F., while at night the temperature seldom drops below 74°. The rainfall averages about 90 inches, although in some years it has reached 165 inches.

SALFORD'S REMEDIAL PLAYGROUND.

THE annual report of the Greengate Dispensary, Salford, which has been in existence for 40 years, gives some interesting and suggestive information as to what can and has been done for improving the health of its little patients. The total attendances of out-patients was 6419, and 1029 were new cases who had not previously been attending. The opening of an open-air playground has invited new problems of personal care and of administration, and some remarkable results have been obtained. The number of living-in children of pre-school age will be increased to 20. The report of three years' work of the Greengate School is well worthy of attention. In the new open-air shed and playground the method of "individual work" in place of the previous method of formal class teaching has almost been completed. The principles adopted in the physical training of the puny and defective children from the start were the discontinuance of absolute rest in bed and use of splints as curative agents for the weak, ill-grown, and distorted limbs, and the substitution for the whole body, and especially for the development of the arms and the chest, approximate and spontaneous activity, fresh air, good nutrition, happy social surroundings, and full employment for the mind. By these means dormant vital processes and nerve activity were awakened and expressed themselves in a better circulation, ampler range of breathing, and an invigorated muscular response. By natural rather than artificial processes the distorted bones of the rickety children grew into their proper shape as part of a genuine process of healthy vigour of body and mind alike. The results were remarkable and the success is graphically attested by the series of photographs, which might well be labelled "before" and "after," in the report, and by the charts illustrating the attainment of normal growth in height and weight by rickety and deformed children under favourable circumstances. Dr. A. A. Mumford puts the matter tersely:—Away with splints and lying in bed, give the air and sun a chance, aided by good food and exercise and happy occupation for the mind. This is the basis of the wonderful results attained in the "remedial playground" situated in the midst of a dense slum area. The results achieved in this little school seem not far short of miraculous. The development begins almost at once, the children literally begin to live.

MOTHERCRAFT.

ANY normal woman who can produce a baby can nurse one. This is the faith insisted on in the section on lactation of an admirable little manual[1] by the matron of the Mothercraft Training Society, and is justified by the excellent results obtained at the Trebovir-road Clinic, which is its headquarters. Miss Liddiard discusses seriatim the difficulties that are met with from time to time in breast-feeding, and shows that they can nearly always be overcome. The teaching given with regard to the induction, management, and re-establishment of lactation is clear and uncompromising. The principles of artificial feeding, with hints on weaning and feeding after nine months, are also discussed. The little book is, however, more than a survey of feeding problems. It is an excellent summary of the whole science of mothercraft, and should be of considerable value to young and expectant mothers. It is really an epitome of the teaching given at the Trebovir-road clinic, for the benefit of those who are unable personally to attend the courses of lectures there. There are two or three useful chapters on the expectant mother and the necessary preparations for the advent of the baby; the care of premature babies and the home treatment of various small ailments are also dealt with, the book ending with a chapter of simple recipes. In an introduction to the volume Dr. J. S. Fairbairn points out that it is on the preventive side of the subject that emphasis is chiefly laid by the author, and rightly so, since "prevention is the vitalising force in present-day medicine."

OPENING OF A NEW L.C.C. MENTAL HOSPITAL.

THE Minister of Health will perform the opening ceremony at West Park Mental Hospital, Epsom, on Friday, June 20th, at 3 P.M. This is the eleventh mental hospital under the administration of the London County Council, and is planned to provide a detached building for each class of patient. The hospital as now built will provide accommodation for 1732 patients, and ultimately the completed building will contain 2096 patients.

Messrs. Chas. Hearson & Co., Ltd., are showing a complete selection of bacteriological, pathological, physiological, chemical, and research apparatus in the Spratt's Patent Pavilion near the British Government Building at the Wembley Exhibition.

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[1] The Mothercraft Manual. By Mabel Liddiard. London: J. and A. Churchill. 1924. Pp. 175. Price 3*s.* 6*d.*

An Address

ON

PUERPERAL SEPSIS:

ITS PREVENTION AND TREATMENT.

Read before the Ulster Medical Society at Belfast

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IN introducing the subject of puerperal sepsis for discussion this evening I make no excuse, inasmuch as it is a problem which to-day must command the serious attention of our profession. Unfortunately, throughout the civilised world the present death-rate from septic complications of childbirth is little better than it was 30 years ago. This has been emphasised in many recent writings. Eden, in 1922, drew attention to the increasing mortality from childbirth from 1911 to 1920, and pointed out that this increase was due to the factor of infection, deaths from other causes having actually decreased. Whitridge Williams, in the preface to the fifth edition of his classic on "Obstetrics," recently published, refers to the statistics of Howard and Eichel, which prove that in America childbirth was actually more dangerous in 1921 than in 1916. Furthermore, to quote Williams's words, "The death-rate is greater in urban than in rural communities, and that while reasonably satisfactory results are obtained in the largest cities, in which a considerable proportion of deliveries are cared for in hospitals conducted by trained specialists, they are superior in country districts to those obtained in the medium-sized and small towns."

This is a very interesting observation, and it is possible that it may have some bearing on the discrepancy that exists in the incidence of deaths from puerperal sepsis in England, Scotland, and Ireland respectively.

INCIDENCE OF PUERPERAL SEPSIS.

In Table I. and Chart 1 are shown the death-rate from sepsis as per 1000 births in the three countries for the ten years 1912 to 1922 inclusive. England is far and away the highest with an average death-rate of 3·3 per 1000. Scotland is lowest with a rate of 1·6 per 1000, and Ireland very near with a death-rate of 2·0 per 1000. Scotland and Ireland together have an average for the period of 1·8 compared with that of 3·3 for England. These figures, when compared with the corresponding number of births, bring to light the interesting observation that, as a general rule, the higher the birth-rate the greater is the individual maternal death-rate from sepsis. The average number of births per annum in the three countries over the same period is as follows:—

TABLE I.—*Extract from Registrar-General's Report. Deaths from Puerperal Sepsis in Relation to Births. Years 1912–1922.*

ENGLAND AND WALES.

Year.	Births.	Deaths.	Rate per 1000.	Year.	Births.	Deaths.	Rate per 1000.
1912	321,362	1216	3·7	1918	328,615	845	2·5
1913	324,492	1108	3·4	1919	411,287	1157	2·8
1914	331,730	1365	4·1	1920	424,929	1730	4·07
1915	397,130	1201	3·02	1921	359,470	1171	3·2
1916	317,535	1083	3·4	1922	333,662	1079	3·2
1917	296,012	873	2·9				

SCOTLAND.

Year.	Births.	Deaths.	Rate per 1000.	Year.	Births.	Deaths.	Rate per 1000.
1912	122,716	193	1·5	1918	98,554	113	1·1
1913	120,516	160	1·3	1919	106,268	150	1·4
1914	123,934	229	1·8	1920	136,546	242	1·7
1915	114,181	221	1·9	1921	123,201	250	2·02
1916	109,942	185	1·6	1922	115,085	228	1·9
1917	97,441	165	1·9				

IRELAND.

Year.	Births.	Deaths.	Rate per 1000.	Year.	Births.	Deaths.	Rate per 1000.
1912	101,035	215	2·1	1917	86,370	167	1·9
1913	100,094	193	1·9	1918	87,304	160	1·8
1914	98,806	214	2·1	1919	89,325	155	1·7
1915	95,583	203	2·1	1920	99,536	252	2·5
1916	91,437	212	2·3				

England	351,256	Ireland	94,498
Scotland	115,329		

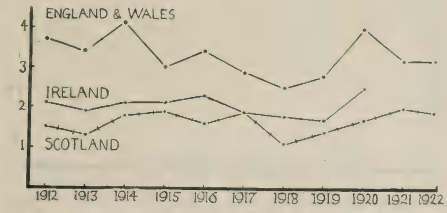
The remarkable rise in death-rate in the year 1920 which appears in all countries is reflected also in the total number of births, which shows a sudden increase after the fall during the years of the late war. The same fact is demonstrated in the English statistics over a longer period. The birth-rate in England is slowly declining, and with the fall there has been a slight diminution in the number of deaths from sepsis.

Years.	Births (average) per annum.	Maternal death-rate per 1000 (puerperal sepsis).
1883–1892	632,300	3·64
1892–1902	638,271	3·26
1912–1921	351,256	3·30

Ireland and Scotland consist largely of rural communities, contrasted with the thickly populated industrial areas spread over the greater part of England, and one cannot help but think that this may be one of the general causes which are responsible for the variation in the three countries.

The factors which govern the incidence of sepsis are chiefly centred in the large areas of population, and although ideal midwifery may be practised and taught in the large institutions, the great part of maternity practice in England to-day falls on the shoulders of the family practitioner, the midwife, and, I am afraid, the "handy-woman," who still, "sub rosa," plies her trade. In Birmingham, where my impressions have chiefly been gained, puerperal sepsis is all too common, just as it is in other large communities, although Birmingham compares very favourably with the country as a whole. In the year 1923 the notifications of puerperal fever in Birmingham numbered 185 (9·6 per 1000 births) and the deaths from this cause registered 34 (1·7 per 1000 births). Both notifications and deaths, however, are but a very rough index of the actual incidence of sepsis, inasmuch as the former do not include a very large quota of recoveries, and the latter only record the tragedies. In other words, a great number of cases undoubtedly occur which never see any register, but which help at a later date to swell the gynæcological out-patient departments and the consulting-room. Many a time have I been asked whether such and such a patient with pyrexia of 101° F. or over, and a pulse-rate of 120, should be notified as a case of "puerperal fever." My reply is that it is always advisable to consider serious morbidity in the parturient woman as due to sepsis, and that notification should always follow the demonstration of a streptococcus in a uterine swab. In other words, it is obligatory to make a bacteriological examination if the question of sepsis should arise, just as a swab is taken from the pharynx in the diagnosis of diphtheria.

CHART 1.



Deaths from puerperal sepsis per 1000 births from 1912 to 1922.

FACTORS CONCERNED.

I have referred to certain factors in the incidence of puerperal sepsis which preponderate in towns as compared with the country. What are these factors? One is undoubtedly the squalor and dirt in which many town-dwellers live, aided and abetted by overcrowding. Another is the bustle and rush which characterises the busy practice of the town practitioner. With a daily visiting list of 40 or 50 it is impossible to give the attention and detail to every midwifery case that is so essential to avoid sepsis every time. A third is the large number of cases which to-day are being attended by midwives, or by a doctor and midwife with the proviso that the doctor shall only be called in when necessary. This statement will probably be challenged, but I have been very much impressed during the last year or two by the number of cases of severe uterine sepsis to which I have been called by the practitioner after he in turn has been consulted by the midwife who delivered the patient.

The introduction of the Midwives Act in England in 1903 has, in my opinion, not been attended by the subsequent diminution of puerperal sepsis which might reasonably have been expected. Table II. and Chart 2 show the incidence of deaths from puerperal sepsis per 1000 births for the 20 years previous to the introduction of the Act. Compare this with the results of Chart 3 (last ten years). I think it will be agreed that there is little change. The same applies to the application of the Midwives Act for Scotland, which came into force Jan. 1st, 1916 (compare Table I.).

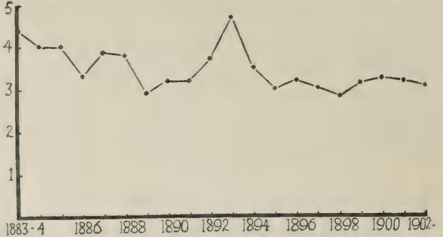
TABLE II.—*Extract from Registrar's Report for England and Wales.*

Year.	Births.	Deaths.*	Rate per 1000.	Year.	Births.	Deaths.*	Rate per 1000.
1883	610,676	2701	4·4	1893	644,938	3094	4·7
1884	631,783	2580	4·0	1894	632,538	2257	3·5
1885	628,999	2534	4·0	1895	636,130	1927	3·0
1886	638,168	2160	3·3	1896	654,796	2123	3·2
1887	631,808	2521	3·9	1897	625,249	1898	3·0
1888	640,154	2457	3·8	1898	612,288	1767	2·8
1889	647,574	1909	2·9	1899	632,588	1973	3·1
1890	615,531	2016	3·2	1900	627,848	2017	3·2
1891	632,940	2069	3·2	1901	650,649	2079	3·1
1892	645,368	2439	3·7	1902	666,687	2003	3·0

* Deaths from puerperal fever.

Causes of death.	1901.	1902.
Puerperal septicæmia	1490	1464
Puerperal pyæmia	37	54
Phlegmasia alba dolens	74	95
Puerperal fever (not otherwise defined)	478	390
	2079	2003

CHART 2.



Deaths from puerperal sepsis in England and Wales per 1000 births from 1883 to 1902.

THE MIDWIFE.

The midwife, generally speaking, is an excellent woman who does her best for her patient, but the short training she receives prior to examination for the C.M.B. diploma cannot and does not ingrain in her the practical essentials of asepsis and antisepsis. It takes the medical student at least five years and members of the nursing profession three years in which to absorb the practical knowledge, and yet we grant many an uneducated woman a certificate to practise midwifery after a few months' theoretical training and a negligible amount of practical experience. The only proviso is that she shall call in medical aid under certain conditions, one of which is the occurrence of pyrexia—truly closing the door when the horse has escaped!

The trained nurse who takes the C.M.B. diploma is a very different proposition, especially if she has been surgically trained. Surgical cleanliness is a part of her unconscious self, and one cannot help wishing that the C.M.B. qualification had been reserved as a higher degree, so to speak, for the nursing profession. The trained "district nurse" who attends maternity cases is a very valuable asset to the medical profession and the public, and she should be encouraged to the exclusion of the uneducated and poorly trained individuals who to-day flourish in the big towns, and appear to make a very lucrative income from maternity practice in the working-class areas.

MATERNITY HOMES.

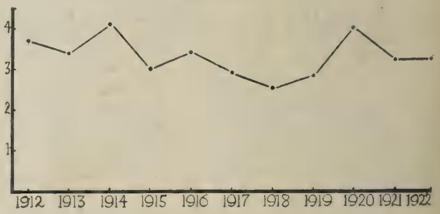
Whilst on the subject of the maternity nurse another point calls for consideration, and that is the maternity home. In many of the large towns in England, and perhaps here also, numbers of so-called "maternity homes" are springing up into which women are taken for the purpose of their confinement. These places are usually presided over by a woman who is protected by a C.M.B. diploma, and either she or her staff conduct the labour. The "home" is frequently nothing more than an ordinary poorly furnished house, and no medical aid is solicited unless something goes wrong. I have frequently seen grave cases of puerperal sepsis in such places, many of which are none too clean, and where I have no doubt that far more "obstetric meddling" goes on than is conducive to the good of the patient.

It is one thing to train a woman for the C.M.B., but it is another to educate her in the proper equipment and management of a nursing home, as I have pointed out in a recent letter to THE LANCET.[1] A remedy lies in the *registration and periodical inspection of all nursing homes where maternity patients are taken.* Reputable institutions would welcome the recognition, whilst less desirable places would automatically disappear.

THE "EXTERN" MIDWIFERY CHARITIES.

That it is possible to prevent puerperal sepsis, given the necessary personnel and care, even *in the homes of the very poor*, is shown by the annual reports of the various extern midwifery charities. Recently I have perused the annual reports of the Rotunda, Liverpool, Manchester, Sheffield, and other maternity "extern" departments, and it is very refreshing to note the low incidence of maternal morbidity which attends the extern midwifery practice of the large hospitals in these centres. At my own hospital, the General Hospital, Birmingham, an extern midwifery department was opened last year. The "district" comprises the very worst slums in the city and is under the charge of my assistant, Mr. A. B. Danby, an obstetric house surgeon, a maternity sister and two trained nurses, and the students of the hospital. The maternal morbidity based on the B.M.A. standard is 1·2 per cent.

CHART 3.



Deaths from puerperal sepsis in England and Wales per 1000 births from 1912 to 1922.

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[1] THE LANCET, 1923, ii., 1278.

for the year, a very satisfactory figure when consideration is taken of the patients' surroundings and the absence of most of the various obstetric luxuries which are sometimes thought essential for the prevention of sepsis. Most of the usual obstetric complications have been encountered, and I think that the main factor in the prevention of sepsis has been the care bestowed in the antenatal clinic.

ANTENATAL WORK.

There is no doubt about the importance of careful routine antenatal work under proper medical supervision as a factor in preventing puerperal sepsis. In the "extern" clinic at the General Hospital, Birmingham, every pregnant woman is examined at least once towards the end of her pregnancy by the honorary assistant obstetric officer. Malpositions are then corrected, the pelvic and abdominal measurements noted, and a swab taken from the cervical canal. Should streptococci be isolated from the latter, an autogenous vaccine is prepared and administered to the patient before the onset of labour. Careful notes are taken by the obstetric dressers on separate case-sheets for each patient, and these are filed for reference when labour commences. The actual labour is attended by the obstetric dresser, supervised by the maternity sister or one of her staff. It is the duty of the nursing staff to impress upon the student the antiseptic ritual as applied to obstetric practice in domestic surroundings, and also to prevent unnecessary vaginal examinations. As a rule one examination only is permitted during labour. The nursing staff attend with the students during the puerperium and take the usual steps to prevent infection after labour. In other words, it is the general aim to impress upon the students the fact that labour is a physiological and not a pathological process, and that pathological complications are to be dealt with before rather than during labour.

It is not to be expected that the knowledge, care, and experience requisite for efficient antenatal work can be exhibited by midwives with their brief period of training. The responsibility should not be shouldered by them, and I hope that the day may come when every prospective mother will have the advantage of a careful examination by a medical practitioner before her labour, even though a midwife actually officiates at the latter. What can be accomplished in the prevention of sepsis in the "extern" districts of hospitals should with some organisation be possible for other members of the community.

SPECIALISM FOR THE GENERAL PRACTITIONER.

Is it too much to hope for the evolution of "practitioner obstetricians," specialists in their own sphere, who in the area where they practise are responsible for the obstetric work of their district, and who do nothing else? Such obstetricians should receive generous remuneration from the State Insurance funds, and in addition to their own midwifery practice should act as supervisor of the midwives' cases in the same area. Surely by means of coöperation and coördination amongst practitioners such a step is possible.

The general practitioner with his multifarious duties would probably be only too glad to relinquish the additional responsibilities and trials of a large obstetric practice. General practice and midwifery do not easily assimilate, and the busy practitioner is, I think, to be congratulated on the fact that taking all the difficulties into consideration his results are as good as they are.

AUTO-INFECTION.

I wish in the next place to direct your attention to the consideration of an aspect of the problem which appears to be somewhat neglected. I refer to the question of auto-infection. When "puerperal fever," so-called, occurs, the tendency is generally for mutual recrimination to take place between the doctor, the nurse, and the patient's relations, and in the end I am afraid that the doctor is as often as not saddled with the whole blame for the débâcle. Although no doubt a large amount of infection is introduced from without, or carried up to the cervix from the vulva or perineum by the examining finger, I am not prepared to admit that the onus of infection is by any means always to be laid at the hands of the medical or nursing professions.

During the last few years I have repeatedly been asked in consultation to see patients where the doctor and nurse have both emphatically informed me that no vaginal examination has ever been made, and I believe them. In many cases, in fact, the child has been born before the arrival of any assistance, and yet puerperal streptococcal septicæmia has occurred. Where and how has the infection arisen? Had the doctor been so unfortunate as to use forceps in one of these cases, the blame would naturally have been laid at his door. That auto-infection does occur was recognised by Semmelweiss in 1861, who stated, "In rare instances the decomposed animal organic material which causes child-bed fever when absorbed is produced in the patient herself." Ahlfeld and Kaltenbach (1883–89) first put forward the suggestion that pathogenetic bacteria are present in the lower genital tract of many healthy pregnant women and that they may cause puerperal infection. A considerable amount of work has been done since, both with regard to the bacteriological investigation of the vulva and vaginal secretions during pregnancy, and of the lochia after labour. To a certain extent the conclusions are contradictory. Generally speaking, the weight of evidence is in favour of streptococci, both hæmolytic and non-hæmolytic, being present in varying proportions.

Whitridge Williams, however, after carefully sifting the evidence for and against auto-infection, expresses himself in the following terms: "In the first place, it appears that the vaginal secretion of normal healthy pregnant women does not contain streptococci which grow upon ordinary agar. On the other hand, the preponderance of evidence indicates that in a varying proportion of patients it does contain streptococci which grow readily in glucose bouillon. Furthermore, it is probable that the incidence of the latter depends in great part upon the personal cleanliness of the patient; and finally there is no evidence that the presence of such streptococci plays any part in the production of puerperal infection." This last statement is based upon the observations that in cases where streptococci have been demonstrated the puerperia have subsequently proved to be afebrile.

In the antenatal clinic at Birmingham General Hospital the taking of a swab from the cervix is part of the routine examination of patients. When streptococci are isolated the women are kept under close observation, and a research is at present in progress to ascertain whether the cocci tend to disappear as the pregnancy advances and whether they can be detected subsequently in the lochia.

Bacteriological Results in 50 Swabs.

The bacteriological results recorded in the last 50 cervical swabs by my assistant, Mr. A. B. Danby, and Dr. W. T. Hillier, bacteriologist to the hospital, are as follows:—

Organisms.	Number.	Per cent.
None on culture or film	3	6
,, ,, but + to film	27	54
,, film but culture +	3	6
Streptococci on culture	5 } 7	10 } 14
,, film	2	4
Staphylococci on culture	18	36
,, film	7	14
Diplococcus on film (Gram +)	1	2
Coliform bacilli on culture	2	4
,, ,, film	10	20
Gram + bacilli on culture	3	6
,, ,, film	30	60
Diphtheroid bacilli on culture	2	4
,, ,, film	15	30
Sarcinæ bacilli on culture	3	6
,, ,, film	1	2

Inasmuch as the puerperia in the extern patients have been afebrile in 98·6 per cent., it appears probable that the streptococci isolated are non-pathogenic.

No definite conclusion, however, can be reached until the investigation has been in progress over a long period and many hundreds of cases have been observed.

Attempts have been made from time to time to demonstrate that the streptococcus of virulent puerperal infection—i.e., true "puerperal fever"—is specific. Krönig, Williams, and Schotmüller, for example, have isolated an anaerobic streptococcus which is designated *Streptococcus putridus*, and which they affirm is more frequently concerned in the production of puerperal infection than the ordinary aerobic group. Mackey, on the other hand, claims to have isolated an organism of such definite morphological appearance that he associates it always with puerperal infection, and is able to pick it out from streptococci obtained from other sources. He calls it *Streptococcus puerperalis*. The work awaits confirmation, and in the meantime it appears advisable to regard all streptococci in the genital tract of the parturient woman as potential sources of infection.

Infection by Blood-stream.

I turn to another question—viz., can puerperal infection arise from a septic focus elsewhere in the body by infection of the uterus via the blood-stream? The question is prompted by the following three cases, which I select as examples bearing on the point.

Case A.—A primipara of good social position had suffered from chronic inflammation of the maxillary antrum for two years before pregnancy occurred. During the early months of gestation suppuration in the antrum appeared to be probable, but operation was deferred owing to the coexisting physiological condition. Labour took place at the patient's home under ideal conditions. A senior and experienced practitioner was present, with a fully-trained nurse. No vaginal examinations were made either before, during, or after labour, and the placenta was expelled naturally from the vagina. The patient had not previously suffered from any vaginal discharge or pelvic symptoms. Pyrexia occurred a few days after labour, and owing to coexisting headache, &c., it was thought that the maxillary antrum might be the cause of the high temperature. A surgeon was called in and he drained the antrum, evacuating pus. The pyrexia did not subside, however, and a complete bacteriological investigation was then made. Three swabs from the uterus and the blood all showed the same streptococcus. The urine was sterile. The weak link in the chain is that the ear and throat surgeon did not have the pus from the antrum examined bacteriologically.

Case B.—A multipara in the heart of the country in the Midlands was delivered naturally at her cottage of a healthy full-term child and placenta before the arrival of either practitioner or district nurse. Her husband only was present at the time. The previous pregnancies had been normal and the puerperia uncomplicated. The patient had suffered from chronic otitis media for some years. Septicæmia developed within three days from the confinement. A uterine swab and also a blood culture showed a streptococcus. The patient died in hospital 14 days later with a cerebral abscess. At the autopsy the uterus presented the typical signs of septic endometritis and metritis.

Case C.—A primipara of good social status during the later months of her pregnancy developed nephritis. Albumin and streptococci were present in the urine. Labour took place in a first-class nursing home under the supervision of a skilled consulting obstetrician. In spite of all care and precautions, streptococcal septicæmia followed the labour with a fatal result. This case is, of course, open to the criticism that owing to the presence of streptococci in the urine an ascending infection of the genital tract may have occurred, in spite of the precautions taken.

Examples such as I have cited naturally direct thought in one direction. Apart altogether from obstetrics we are familiar with the results of a chronic bacteriemia. Instances may be mentioned of acute pyelitis supervening upon a suppurating tonsil, chronic pyæmic abscesses occurring in a patient with a suppurating maxillary antrum, or iritis relieved by the extraction of carious teeth, with alveolar sepsis.

It is not a great step, therefore, to trace the development of uterine sepsis in the placental site of a patient who is the subject of a chronic suppurating focus. It is reasonable to suppose that streptococci under such conditions may take a fresh lease of life both in virulence and morphological characteristics. We have only to compare the activities of the coliform group of bacteria under similar circumstances. That bacteria are brought to the uterus by the blood-stream has been shown conclusively by Whitridge Williams, who, in fatal cases of influenzal pneumonia, demonstrated the presence of chains of streptococci in arterioles *making their way through the uterine musculature to the decidua*. Czemetschka and Burchardt also have reported the presence of pneumococci in the uterine lochia, as a manifestation of a general septicæmia originating from a focus outside the generative tract.

It is not possible to go further at this stage. In passing, however, may I draw attention once more to the very high mortality-rate from puerperal sepsis in all countries in the year 1920, and raise the question as to whether some of the mortality may not have been a blood infection and related to the influenza epidemics? The practical consideration that evolves from the discussion is, to my mind, the importance of treating carefully and thoroughly any septic focus that may be present during pregnancy, rather than deferring the same until a later period.

Treatment of Puerperal Sepsis.

I am afraid that I have left very little time for a discussion of therapeutic methods. My excuse is that the best treatment of puerperal sepsis is its prevention. I do not propose to enter into a full account of all the various measures that have been vaunted from time to time, but simply to refer to the methods which in my hands have given the best results. At the outset it must be remembered that many cases undoubtedly will recover whatever treatment is adopted, and, on the other hand, some patients are lost in spite of the application of every measure which we know to-day.

General Principles.

In order to obtain the best results, however, certain principles must be adopted. The first of these, in my opinion, is that treatment must be started at the earliest possible moment. It is no good waiting until the symptoms have persisted for several days in the hope that the temperature and pulse-rate will subside. If this is the case, all well and good, but if the contrary is true valuable time has been lost and the chances of the patient's recovery jeopardised. I know the argument will be raised that there are other causes of pyrexia than puerperal sepsis, and that in many cases alarming symptoms subside naturally without producing any further trouble. This is so. I prefer, however, to regard any rise of temperature to 101° F. with a corresponding increase of pulse-rate to 110 or over as a manifestation of sepsis until the contrary is proved, and under these circumstances I always counsel the bacteriological investigation of the uterine cavity by examination of a swab.

The second principle is that it is unwise in the interests of the patient to differentiate between sapræmia and septicæmia, or again to depend upon the superficial characteristics of the uterine lochia. The former in practice merges so easily into the latter, and both foul-smelling, purulent, and serous discharges equally may contain dangerous streptococci that the issue is only obscured if any reliance is placed upon the same in forming a diagnosis.

The third important factor is that the patient shall be in surroundings where efficient nursing is possible, and where it is carried out by a properly trained nursing staff. It is perhaps impossible under all circumstances, but my own practice, whenever feasible, is to transfer the case to hospital or nursing home. As to the details of actual treatment, the measures adopted should, in my opinion, be both local and general. I always adopt the same routine which is as follows:—

Local Treatment.

The patient is anæsthetised and placed in the lithotomy position. The external genitals are shaved if this has not already been done, and thoroughly cleansed with a solution of sodium hypochlorite. The preparations I personally use are either "Milton" or

Burroughs and Wellcome's "Tolamine." The vagina is next swabbed out and finally the cervix and uterine cavity, a large quantity of hypochlorite solution being used during this procedure. The uterine cavity is then *lightly* curetted and a large double drainage-tube introduced into the uterine cavity and carried to the fundus of the organ. This tube is sufficiently long for the ends to be brought outside the vulva, and is used for repeated irrigation of the uterine cavity with the hypochlorite solution. The uterus is washed out every two or three hours by the nurse in attendance, who syringes the solution through the tubes.

I am fully aware that this local treatment of the septic uterus has been subjected to criticism. The curette, whether it be sharp or blunt, has been denounced as an instrument which conveys the infecting organisms deeper into the uterine tissues and opens up fresh channels of infection. I can only say that *curettage in the constant presence of a powerful antiseptic* has not, in my personal experience, ever done one atom of harm, and further, it has on several occasions undoubtedly done good by removing retained decomposing portions of placenta or membrane. It is also only right to state that constant or frequently repeated irrigation of the septic uterus is also not generally adopted. Gordon Luker, in fact, in a recent communication, observes that at Queen Charlotte's Hospital he has not observed any particular advantage from the adoption of Carrel-Dakin methods, and in recent cases has been devoting less and less attention to the local uterine conditions. I am entirely open to conviction on these two debatable points, but as long as the results of treatment remain satisfactory in my hands I do not feel inclined to change my technique. The important point, I believe, is that curettage *must be light*, and it *must be associated with constant irrigation* of the uterus. If *heavy* and *employed alone it is undoubtedly dangerous.*

Up to date I can claim a consecutive series of 62 cases of severe puerperal sepsis with only five deaths. In this series a uterine swab showed infection with a streptococcus either alone or as a mixed infection, and no case is included in which the pulse-rate did not reach 120. A further point is worth placing on record, and that is that two of the five fatal cases were neither curetted nor irrigated. Serum- and vaccine-therapy alone was employed.

One other remark in connexion with irrigation: if it is adopted at all no half measures will suffice. The vaginal douche, or the single intra-uterine douche, only washes away such discharge as happens to be present at the moment and can in no sense be curative.

General Treatment.

The general treatment of a septicæmic patient in my hands resolves itself into the application of the following measures: (*a*) Serum-therapy; (*b*) autogenous vaccines; (*c*) intravenous "acriflavine" with (*d*) a concentrated and nutritious diet, and a liberal allowance of alcohol. Since the publication of Luker's paper I am testing the value of intravenous and intramuscular solutions of quinine bihydrochloride as recommended by him, but cannot as yet express any considered opinion, as the method is too recent. Intravenous injections of Witte's "peptone" have not, in my hands, proved of sufficient value to replace or add to other measures. Anti-streptococcic serum is best given, I think, intravenously, in large doses, with an equal quantity of saline as advised by Leith Murray. I administer an initial dose of 50 c.cm. of stock serum with 50 c.cm. of normal saline and 1 c.cm. of serum from a freshly-killed guinea-pig. The latter is added in order to introduce "complement" as suggested by Leith Murray. On each of the two following days 30 c.cm. of serum is given with an equal amount of saline, the injection on each occasion being administered very slowly. Autogenous vaccines are used in conjunction with other measures, but I should not care to rely upon vaccine-therapy only in a severe case of puerperal systemic infection. I cannot claim to have witnessed any very dramatic results in acute cases of sepsis treated only by vaccine, and on the other hand, I can recall three deaths. Perhaps I have been unlucky.

Acriflavine in a strength of 1 in 250 in normal saline I have now used for some years in the treatment of puerperal sepsis, and I think that it does good. In severe cases it is given intravenously in doses of 20 c.cm. morning and evening. In a few instances the daily injections have been continued for over a fortnight until the patient's skin has assumed a lemon tint. The urine in these cases has shown clear evidence of the treatment. One patient was treated solely by this method and made an excellent recovery, although the infection originally appeared to be of a very virulent type. The disadvantage attached to these repeated injections is the discomfort attached to the treatment. Patients often complain very bitterly about the continued punctures, especially after several days. I think that I have said sufficient to render it evident that we possess no one specific in dealing with severe sepsis once the infection has secured a firm hold of the individual. As I have noted previously, cases occur where the infecting agent is so virulent that the patient is dead almost before treatment can be instituted. I remember one such instance some years ago. I was called to see a primipara confined 24 hours previously who had a temperature of 104° F. She was covered with an erythematous rash and died the following morning within 48 hours of the labour. A diplococcus, apparently the pneumococcus, was present in the blood.

In conclusion, therefore, may I repeat the words that I have already used—viz., that with our present knowledge, it is far better to prevent puerperal fever than to attempt its cure. Whilst acknowledging the debt we owe to therapeutics in reducing the mortality from puerperal sepsis, the problem of prophylaxis appears to offer less difficulties in the attainment of success.

THE TREATMENT OF SEVERE GASTRIC AND DUODENAL HÆMORRHAGE.[1]

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The Mortality from Gastric and Duodenal Hæmorrhage.

I believe that hæmorrhage from gastric and duodenal ulcers is far less often fatal than is generally supposed. I have never had a case under my care in which death resulted, although I have only once had to call in the aid of a surgeon to save the patient's life. Dr. J. J. Conybeare has investigated the records of all post-mortem examinations on cases of fatal hæmorrhage from an ulcer of the stomach and duodenum in the absence of cirrhosis of the liver, which occurred at Guy's Hospital between the years 1911 and 1920 inclusive. The total number was only 23, which is equivalent to 2·6 deaths a year, if allowance be made for the fact that no post-mortems were made on 12 per cent. of patients dying in the hospital. The deaths from this cause accounted for no more than 0·37 per cent. of the 6302 autopsies performed during the ten years. Only 13 out of the 23 died from hæmorrhage without having undergone some previous operation. As about 600 cases were admitted during this period for hæmorrhage from an acute or chronic ulcer, the mortality of severe gastric and duodenal hæmorrhage is only about 2·5 per cent.

Medical Treatment of Hæmatemesis.

The most important factor favouring the cessation of hæmorrhage from the stomach or duodenum is complete immobility. Immobility of the patient keeps the blood pressure down; immobility of the stomach and duodenum prevents a newly-formed clot from being dislodged. Distension of the stomach and duodenum removes the support of surrounding tissues from the bleeding vessels and keeps the aperture in its wall widely open. An empty, contracted stomach, like an empty, contracted uterus, has no lumen, and its effect on hæmorrhage is the same. It reduces the flow of blood through its blood-vessels, and it controls the hæmorrhage by the direct pressure of the opposite wall of the viscus on the bleeding surface.

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[1] A contribution to a joint discussion at the Medical, Surgical, and Therapeutic Sections of the Royal Society of Medicine. A short abstract of this paper and a report of the discussion appeared in The Lancet of March 15th.

Immobility of the patient is secured by keeping him quiet in bed, reassuring him about his condition —a very important point, too often neglected, especially in hospital—and giving him sufficient morphia by repeated subcutaneous injections to keep him drowsy and prevent the mental and physical restlessness which are otherwise likely to be present. Atropine should be added to the morphia in order to inhibit as much as possible the secretion of gastric juice.

Immobility of the stomach and duodenum is secured by giving the patient neither food nor drink by mouth. Complete starvation should be continued until, so far as can be ascertained, no bleeding has occurred for 48 hours. The ordinary strict treatment of an ulcer with diet, alkalies, belladonna, and olive oil should then be begun. During the period of starvation the mouth should be kept scrupulously clean; there is then no danger of parotitis. As much dextrose solution as possible should be given by rectum, and if the mouth is parched and the patient shows signs of being dehydrated, saline solution should be injected subcutaneously. There is no object in giving ice to suck. To the stomach blood is as much a food as any other protein, so that gastric juice is secreted and peristalsis occurs as actively as with an ordinary meal. When the hæmorrhage is severe, the rapid distension of the stomach results in its more or less complete evacuation by hæmatemesis. This is followed by contraction of the stomach, which may cause the hæmorrhage to cease. Smaller quantities are evacuated in the ordinary way through the intestines and give rise to melæna. But when the hæmorrhage is severe and continues after hæmatemesis has occurred, or when in spite of its severity it is not sufficiently rapid to cause the sudden distension which results in its ejection by mouth, death may result unless steps are taken to empty the stomach. It is common knowledge that uterine hæmorrhage can almost always be arrested by emptying the uterus and causing it to contract; it is less widely known that similar treatment for severe gastric hæmorrhage is almost equally effective.

A stomach-tube is passed just far enough for the end to reach beyond the cardia. This prevents any possibility of directly disturbing the bleeding surface. The stomach is now emptied; this can be most conveniently done by having the tube connected with a Senoran's evacuator. The stomach is next washed out with about 4 ounces of ice-cold water, and this is repeated over and over until the water which comes back is no longer blood-stained. Instead of water, 1 in 1000 ferric chloride solution,[2] also iced, can be used, as its styptic action may help to arrest the bleeding. When the last traces of water have been evacuated, a drachm of 1 in 1000 adrenalin chloride is poured into the stomach before withdrawing the tube. This may now gain access to the bleeding surface and cause the leaking vessel or vessels to contract. It is particularly likely to be effective in acute ulcers, and in the condition called gastrostaxis by Sir William Hale-White, in which there is general oozing, presumably from innumerable minute erosions. When given in the ordinary way by mouth, the adrenalin is so diluted by the contents of the stomach that the trace which reaches the bleeding surface must be quite ineffective. There need be no fear that the general blood pressure will be raised and that the danger of a recurrence of hæmorrhage will thereby be increased, as adrenalin given by mouth is not absorbed, and has no effect at all on the blood pressure.

Arrest of Hæmorrhage.

The complete evacuation of the stomach and the stimulation of the mucous membrane with ice-cold water result in firm contraction of the whole organ, and the hæmorrhage is almost invariably arrested if it is gastric in origin. Duodenal hæmorrhage also generally stops, because the duodenum has no longer to deal with blood mixed with acid gastric juice coming to it from the stomach, and both the iced ferric chloride solution and the adrenalin may now reach the ulcer. Hæmorrhage ceases when a firm clot has formed at the bleeding-point. The danger of recurrence depends upon the digestion of the clot by gastric juice, the secretion of which is called forth by blood just as it is by any other food. Consequently, it is essential to render the gastric juice inactive by neutralising as completely as possible all the free hydrochloric acid which is present. For this purpose alkalies must be given which do not, like sodium bicarbonate, stimulate the secretion of more juice after neutralising an equivalent amount of acid, or give off large quantities of carbon dioxide, which distends the stomach and stimulates peristalsis. Oxide of magnesia is almost ideal from these points of view, as it has four times the neutralising power of sodium bicarbonate, it is a comparatively feeble stimulant of gastric secretion, no gas is given off when it combines with acid, and it also acts as a mild aperient and so tends to prevent the severe constipation and resulting putrefaction of blood in the colon, which is the cause of the frequent pyrexia after a severe gastric or duodenal hæmorrhage. Calcium carbonate is also useful, as it has two and a half times the neutralising power of sodium bicarbonate, it does not stimulate the secretion of gastric juice at all, and it neutralises the acid so slowly that the gas given off dissolves in the water present as rapidly as it forms, so that no distension results. Possibly some of the calcium chloride produced may be absorbed and increase the coagulability of the blood. Bismuth carbonate has only one-third of the neutralising power of sodium bicarbonate and it causes the stools to be black, so it is best avoided, as the naked-eye examination is a rough indication as to whether the hæmorrhage is stopping.

Oxide of magnesia can be most conveniently given as emulsio magnesiæ (B.P.C.), each drachm of which contains 5 gr. of oxide. A mixture is made containing 30 gr. of prepared chalk to each ounce of the magnesia emulsion. An ounce of the well-shaken mixture is given as soon as possible after the hæmorrhage and then hourly during the day, and as frequently as the patient is awake during the night. This is continued until food is begun, when it can be replaced by the usual alkaline powders given half-way between the two-hourly feeds.

In all cases septic foci should be carefully looked for and thoroughly eradicated at an early stage of convalescence; if the ulcer is an acute one no other after-treatment is required.

At the earliest possible moment after a hæmorrhage, the patient's blood should be grouped and a donor should be found who can be summoned at an hour's notice any time during the day or night should transfusion become necessary. If this precaution is taken no patient should die as a result of hæmorrhage from an acute ulcer, or as a result of the general oozing from the mucous membrane in gastrostaxis. Fatal hæmorrhage from a chronic ulcer should also hardly ever occur, as in the most severe cases, where a sclerotic artery incapable of contracting has ruptured, transfusion should tide the patient over sufficiently long for it to be possible to deal directly with the ulcer by operation. The only inevitably fatal cases are the extremely rare ones, in which death occurs actually during the first hæmorrhage, generally owing to erosion of one of the main gastric or duodenal vessels.

The hæmoglobin percentage should be estimated at the same time as the blood is taken for grouping. Daily estimations should be made until the patient is obviously out of danger. When further hæmorrhage is suspected, although no hæmatemesis has occurred, an additional estimation should be made, as a fall in the percentage would confirm this and indicate the wisdom of washing out the stomach. On the other hand, if the hæmoglobin percentage remains unaltered or rises, it is clear that no further hæmorrhage has occurred. Transfusion should be carried out at once if the hæmoglobin percentage falls to 30.

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[2] Daily lavage of the stomach with 1 in 1000 ferric chloride solution was the routine treatment for gastric ulcer recommended by Bourget, of Lausanne, 20 years ago.

Every practitioner may at any moment be called upon to treat a case of severe hæmatemesis. There are few conditions in which life and death depend so directly upon the treatment he adopts. I believe that a fatal result will be extremely rare if treatment on the lines I have laid down is carried out. It is perhaps necessary to point out that for its success to be assured the practitioner must be adequately equipped. He should have in his possession a stomach-tube with a Senoran's evacuator. He should have an accurate hæmoglobinometer, which he is in the habit of using for the diagnosis and control of his cases of anæmia. It is one of the instruments of precision which are easy to use, require very little time, and which ought not to be regarded as a specialist's toy, which nobody but the hæmatologist should be expected to use. There should also be at least one man in every district who can group a specimen of blood and carry out a transfusion. Only six months ago I found that there was nobody in a certain city with 50,000 inhabitants who could do this, and I wondered how many lives had been lost in consequence. Lastly, I hope the time is not far distant when London and every large town will have a list of blood donors, properly grouped, who can be called upon in emergencies, when no suitable relation or friend is available.

When the bleeding has stopped, the percentage of hæmoglobin quickly rises in most cases. In a recent case under my care it rose from 20 to 60 per cent. in 11 days. Iron given by mouth or subcutaneously does not seem to have much effect in hastening the blood regeneration, and arsenic is of still less use. When improvement is slow the patient should be transfused. This not only produces an immediate rise of between 5 and 10 per cent. of hæmoglobin, but it almost always stimulates the delayed blood formation. The general improvement in the patient's condition seems also to hasten the healing of the ulcer, which sometimes tends to be very slow in cases of this kind.

Indications for Immediate Surgical Treatment.

In view of the very small danger of death from hæmatemesis or melæna, it is clear that operation can very rarely be called for with the immediate object of arresting the hæmorrhage. Dr. Conybeare found that in seven of the thirteen cases of hæmorrhage from a gastric or duodenal ulcer, in which death occurred without previous operation at Guy's between 1911 and 1920, the ulcer producing the hæmorrhage was definitely of the acute type—five times in the stomach, once in the duodenum, and once in both stomach and duodenum. In none of the seven cases was there any history which would have justified surgical intervention at an earlier date. One patient had delirium tremens three months before death, and in two other cases the acute ulceration was associated with a lung abscess and gall-stones respectively. It may be safely concluded that in none of these seven cases would any operation on the stomach or duodenum have been successful in preventing death, even if undertaken at the time of the hæmatemesis. In only three of the six cases of chronic ulcer, which died from hæmorrhage apart from operation during the same period—or 0·5 per cent. of admissions from hæmatemesis and melæna—was there a history which could have distinguished them from the acute cases; in none but these could an operation have been reasonably undertaken with some hope of saving life. Quite apart from the very small danger of death from hæmorrhage —2 per cent. at Guy's—the immediate results of operation performed for its direct treatment are so unfavourable that I expect most British surgeons will be inclined to agree with American surgeons, who, according to Balfour, are now unanimous that "the danger of succumbing to hæmorrhage is less than the danger of operation during hæmorrhage."

I believe that the only indication for operation in the acute stage is the occurrence of severe and persistent hæmorrhage in an elderly individual with a long history pointing to the presence of a chronic ulcer, whose arteries are so degenerated that they are unlikely to contract sufficiently for satisfactory plugging by thrombosis.

I have only once found it necessary to have an operation performed on account of hæmorrhage from a gastric or duodenal ulcer. I had advised the patient, a man of 60 with severe arterio-sclerosis, to have a gastro-enterostomy the first time I saw him some months before his hæmorrhage, as he had a very long history of duodenal ulcer, which had led to obvious pyloric obstruction. He refused to submit to surgery, and continued to wash his stomach out two or three times a day as he had done for years. He then had a severe hæmorrhage which was repeated at the end of a week's starvation, when I saw him for the second time. I advised immediate operation. The next morning Sir Berkeley Moynihan found an enormous duodenal ulcer producing pyloric obstruction; he performed a gastro-enterostomy and cut off the blood-supply to the ulcer by overlapping sutures round it. The patient did very well, and died four years later from pneumonia without having had any recurrence of gastric symptoms.

I have also once had to recommend operation on a man who bled repeatedly from a jejunal ulcer, which had developed as a result of a gastro-enterostomy performed the same time as a perforation of a duodenal ulcer was sutured. A jejunostomy was made and the hæmorrhage ceased, but death resulted from peritonitis owing to the jujunum tearing away from the abdominal wall. All his subsequent misfortunes would probably have been avoided, if the surgeon had been content with suturing the perforation without performing gastro-jejunostomy at the time of the first operation.

Is Hæmorrhage in Chronic Ulcer an Indication for Subsequent Operation?

Before deciding whether the danger of a recurrence of hæmorrhage should be regarded as an indication for operation when the patient has recovered from his acute symptoms, it is necessary to see what the results of surgery are in cases of ulcers which have previously bled, and how frequently hæmorrhage occurs after operations on patients who have never before had hæmatemesis or melæna. According to Balfour, hæmorrhage occurred after operation at the Mayo Clinic in 13 per cent. of cases of ulcer (83 duodenal and 17 gastric) with a history of previous hæmorrhage, but only in 0·9 per cent. of cases with no previous hæmorrhage. This may be regarded as the minimal risk, which requires correction by such statistics as those of Hohlbaum from Payr's University Clinic in Leipzig in which the after-history is taken into account, in order to get an accurate idea of the average risk. Hohlbaum reported in 1922 that no less than 20 per cent. of cases in which a gastro-enterostomy was performed for duodenal ulcer were followed by severe and occasionally fatal hæmorrhage, either immediately or months or even years later. As most of the cases in which hæmorrhage occurred were in patients who had previously bled, the operation is now no longer performed at Leipzig for hæmorrhagic cases. Of the nine Guy's cases between 1911 and 1920, in which death followed hæmorrhage from an ulcer and in which an operation had been previously performed, only two had suffered from hæmorrhage before the operation. In one of these death occurred from hæmorrhage the day after a gastro-enterostomy for a duodenal ulcer, and the other from hæmorrhage from a gastric ulcer three years after the excision of an earlier gastric ulcer. In all the other cases the first hæmorrhage occurred after the operation. The hæmorrhage took place respectively seven days, eight days, and five years after a gastro-enterostomy for gastric ulcer, six days after a gastro-gastrostomy for gastric ulcer, and six weeks after an ileo-sigmoidostomy for gastric ulcer. One of those who died after a gastro-enterostomy had had an ileo-sigmoidostomy performed two years earlier. Lastly, one patient died of hæmorrhage 14 days after the suture of a perforated chronic pyloric ulcer, and another nine months after suture of a perforated chronic gastric ulcer. As about 900 cases had undergone operation for gastric or duodenal ulcer during the period under review, and nine such cases died of hæmorrhage, the mortality from hæmorrhage after operation is approximately 1 per cent.

I am able to supply further information on this subject from the statistics of New Lodge Clinic. Out of 60 consecutive patients with gastric or duodenal ulcer admitted to the clinic, who had not previously undergone any operation, five of the 16 gastric cases and eight of the 44 duodenal cases had had hæmatemesis or melæna or both, together making 21·6 per cent. Nine of these patients had an operation subsequently performed for their ulcers on account of pyloric or hour-glass obstruction, and one because of failure of medical treatment; the only one who had previously had a hæmorrhage had another severe hæmorrhage the day after the operation.

During the same period 25 patients were admitted for symptoms which had followed an operation performed for duodenal ulcer. Among the 16 of these who had not previously bled, one had a hæmorrhage three days and another four days after the operation, a third had hæmatemesis three years later, and a fourth had repeated severe hæmorrhages from a jejunal ulcer, which had finally to be excised. The remaining nine had had hæmatemesis or melæna before the operation, and in no less than seven it recurred with equal or greater severity afterwards; in two cases a bleeding jejunal ulcer was still present after two additional operations had been performed. Thus, out of 26 cases of hæmatemesis or melæna no less than 11, or 42 per cent., occurred after operation, and of these four had not previously bled. These figures show that the liability to hæmorrhage is just as great after an operation has been performed for a gastric or duodenal ulcer as after medical treatment, whether the patient has already had a hæmorrhage or not.

Is the Danger of a First Hæmorrhage in Chronic Ulcer an Indication for Operation?

The supposed liability to hæmorrhage and the supposed danger of the latter to life are often used as arguments in favour of the operative treatment of gastric and duodenal hæmorrhage. Neilson has investigated the after-history in a series of 182 patients from Prof. Faber's clinic in Copenhagen, who were diagnosed with a fair degree of certainty as suffering from ulcer. An operation was performed on 42 of them between one and 21 years later, but never for hæmorrhage. The remainder were traced for between two and a half and 19 years; of these 16 had died, but only two, or less than 1 per cent. of the whole series, from hæmorrhage.

Dr. Conybeare's investigations on the history of the 23 fatal cases of gastric and duodenal hæmorrhage, which occurred at Guy's Hospital between 1911 and 1920, throw further light on this question from a different point of view. Of the six deaths from hæmorrhage from a chronic ulcer one gastric and one duodenal case had a history of only six and eight weeks respectively, and one patient, an old man of 74, who died from hæmorrhage from a chronic duodenal ulcer whilst in hospital for a fractured femur, had never suffered from indigestion. Only two patients with a long history of indigestion died as a result of hæmorrhage from a chronic gastric ulcer, and one from a chronic duodenal ulcer without having previously undergone any operation; of these the duodenal case and one gastric case had had previous attacks of hæmatemesis and the duodenal case had had melæna.

We may conclude that only two patients with chronic gastric ulcer and one with chronic duodenal ulcer died of hæmorrhage in Guy's Hospital in the ten years between 1911 and 1920, who had had symptoms which should have made a correct diagnosis possible before the occurrence of fatal hæmorrhage, and whose lives might therefore have been saved if an operation had been performed sufficiently early. But when it is remembered that during the same period two patients with a history of hæmatemesis died from hæmorrhage after operation, and no less than seven whose ulcers had never bled before died from hæmorrhage after operation, it is clear that the number who actually recovered under medical treatment, but who might have died after operation if surgery had been the routine treatment for all cases diagnosed as ulcer, would more than have counterbalanced the death of these three patients who might possibly have been saved by an earlier operation.

The statistics collected by Neilson from Faber's clinic are the only previously published ones which supply the same kind of information as Dr. Conybeare's Guy's Hospital statistics, and the conclusions which can be drawn from them are exactly the same. Between 1897 and 1915 528 patients were diagnosed as having a gastric or duodenal ulcer. During the same period ten patients died as a result of hæmorrhage from an ulcer, but four of them had had no digestive symptoms prior to the fatal hæmorrhage. Four others had had slight pain, nausea, or vomiting within the previous six months, but not before; the ninth had had occasional epigastric pains, to which he "had not paid attention" for a couple of years, and the last had had occasional attacks of "gastric catarrh" for six years. In none had there been any previous hæmorrhage, and in none had the symptoms been of such a nature that a definite diagnosis of ulcer could have been made. It is extremely doubtful whether the most enthusiastic surgeon would have operated on more than one or two of them had he seen them at any time before their admission for hæmorrhage.

In view of these results it seems to me that neither the occurrence of hæmorrhage in the past, nor the danger of hæmorrhage in the future in a patient with an ulcer which has not previously bled can be regarded as in any way pointing to the desirability of surgical rather than medical treatment for a chronic ulcer. In my opinion the only definite indications for surgery are hour-glass contraction and pyloric obstruction, neither of which should ever occur if the diagnosis is made as early as it should be, the treatment is sufficiently strenuous and prolonged, all septic foci are thoroughly eradicated, and proper after-treatment is instituted.

References.

Neilson, N. A.: Acta Chir. Scand., 1922, lv., 105.
Balfour, D. C.: Collected Papers of the Mayo Clinic, 1922, xiv., 53.
Hohlbaum, J.: Mitteil. a. d. Grenzgeb. d. Med. u. Chir., 1922, Suppl. iv., 35.

LEBANON MENTAL HOSPITAL.—The annual general meeting of the hospital, situated at Asfuriyeh, near Beyrout, Syria, will he held at Caxton Hall, Westminster, on Tuesday, June 3rd, at 5 P.M. The chair will be taken by Dr. E. W. G. Masterman.

EAST END MOTHERS' LYING-IN HOME.—At the annual meeting held at 46, Park-street, London, W., on May 21st, Dr. Owen Lankester, on behalf of the committee, made a presentation of an illuminated address and a silver cake basket to Dr. M. Cursham Corner, retiring after more than 40 years' service as medical officer to the home. Dr. Corner stated that when the home was first opened it was the only one of its kind in East London for poor mothers. Mrs. Alfred Lyttelton said that, in going round the home, she had been struck by the fact that the mothers of first babies looked happy and at peace, while the mothers of families often appeared anxious and harassed because they were worrying about the other children at home. She pleaded that help should be forthcoming to enable the home to give to poor mothers the skilled attention and some of the comfort and quiet enjoyed by those in happier circumstances. Mr. W. McAdam Eccles, who had visited the home on behalf of the King Edward Hospital Fund, remarked that during last year, out of 1020 mothers delivered in the home, there was only one maternal death (from accidental hæmorrhage) and not a single death among 1262 mothers delivered on the district. He extended a welcome to Dr. Corner's successor, Dr. W. H. F. Oxley.

THE INORGANIC CONSTITUENTS OF THE BLOOD

IN CERTAIN PATHOLOGICAL CONDITIONS.

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(*A Report to the Medical Research Council.*)

THE inorganic salts of the plasma may be regarded as constituting a Ringer's solution, which must presumably be kept at a fairly constant composition if the life processes are to continue. In this solution circulate the various protein constituents of the plasma, food products in their passage to the tissues, and waste products derived from tissue metabolism. Of recent years these food and waste products have been the subject of numerous investigations: the sugar and urea contents of the blood have, for instance, been extensively studied, and their estimation now plays an important rôle in clinical medicine. The inorganic constituents have attracted less attention. There are, of course, important exceptions to this statement, such as the bicarbonate content of the plasma, which, owing to the development of a simple and rapid method of estimation by Van Slyke, has come to possess a very definite significance in medicine, but it may be safely stated that our knowledge of the variations in the inorganic constituents of the blood is at a lower stage of development than our knowledge of the bodies mentioned above.

The principal reason for this position is to be found in the lack of methods of estimating the inorganic constituents, suitable for clinical application and also adequately accurate. The older methods were laborious, and, in addition, if anything approaching a complete inorganic analysis was attempted, necessitated the use of larger quantities of blood than could be conveniently or justifiably removed from human patients. Simpler and more rapid methods are now available, and it is possible to determine the more important acid and basic radicles in less than 40 c.cm. of blood, a quantity readily obtained by venipuncture.

In this paper some of the results of more than 60 analyses of certain inorganic constituents of the blood are detailed. The material included patients suffering from diabetes, nephritis, toxæmias of pregnancy, decompensated cardiac lesions, and other conditions in which deviation from the normal might reasonably be expected to occur. The substances estimated were: in plasma, chloride, phosphate, and bicarbonate, and in the corresponding serum, sodium, potassium, and calcium. The plasma was separated rapidly by centrifuge with the usual precautions, and the serum removed from the clot within two hours of withdrawal of the blood. Magnesium was not estimated, partly owing to lack of time, and partly to the fact that, in the few papers which have appeared on the subject, no significant variations from the normal have been recorded. Sulphates also were not determined, though Denis has recently shown that in certain types of renal disease considerable accumulations of sulphate may occur in the blood. The importance of estimating as many inorganic constituents as possible in any sample of blood must be recognised, since, as will be seen later, variations in one body may be only capable of interpretation in the light of variations in another.

Methods Employed.

CO_2-combining power of plasma (bicarbonate), Van Slyke.

Phosphate content of plasma, Bell–Doisy.[1]—For this estimation the plasma was removed from the corpuscles within 30 minutes of withdrawal of the blood, minimal amounts of oxalate being used to prevent coagulation. It may be pointed out that the alkaline sulphite solution employed in the method should be prepared at frequent intervals, since otherwise the terminal reduction is unsatisfactory.

Chlorides of plasma, Donleavy–Van Slyke,[2] estimated in the same plasma as the bicarbonate.—The method is known to give somewhat high results, and the figures given, though comparable *inter se*, are not to be accepted as absolute values.

Calcium of serum, Kramer and Tisdall.[3]

Potassium of serum, Kramer and Tisdall.[4]—The serum for this determination was removed from the clot within two hours of withdrawal of the blood. Unless this precaution is observed high values are obtained, owing to escape of potassium from the corpuscles, which are exceedingly rich in this element. Serum left in contact with the clot for as short a time as five hours sometimes shows a definite increase in its potassium content, and in 24 hours the potassium content may double. In a few instances, in spite of the greatest care in adding the cobalti-nitrite reagent to the serum, a fine filmy precipitate, presumably protein, develops, and is detected during the final solution of the potassium cobalti-nitrite precipitate in N/50 permanganate. This precipitate is not due to any ageing of the reagent, but appears to be due to some peculiarity of the serum. Under these conditions the final readings are high, and the determinations were discarded.

Sodium, Kramer and Tisdall.[4]—All precipitates were dried to a constant weight at 110°. Though good results (within ± 5 per cent.) were obtained with simple solutions containing sodium, the results in serum were not entirely satisfactory. Considerable difficulty was at times experienced in drying the crucibles to a constant weight, especially when the same crucible had been used, as suggested by the authors of the method, for a series of determinations. The thick layer of precipitate under these conditions is very difficult to dry thoroughly. On the other hand, unless the filter is adequately clogged, low values are obtained. When any difficulty was found in obtaining a constant weight the results were not accepted.

Typical findings are given in the following tables. The sodium, potassium, calcium, and urea (when determined) are given in milligrammes per 100 c.cm., phosphates as mg. of phosphorus, and chlorides as mg. NaCl per 100 c.cm.; CO_2 as c.cm. per 100 c.cm. of plasma.

Normal Cases.

The findings in the normals (Table I.) call for no extensive comment. The figures obtained are in accordance with those of other workers. The chief points of interest are (1) the relative excess of basic over acid radicles, and (2) the large proportion of the total base which is in combination with hydrochloric acid. As regards the first of these, the excess of base is, presumably, to a very large extent in combination with the plasma proteins. Though the sulphuric and organic acids present were not determined, the amounts of such acids contained in plasma are known to be very small, and would account for a small part only of the excess of base present. Secondly, about two-thirds of the total basic radicles are in combination with a strong acid, hydrochloric, as chlorides, while less than a quarter is combined with carbonic acid as bicarbonate. Only a small part, therefore, of the total base present goes to form the so-called "alkaline reserve" of the plasma, though it must be recognised that part of the base combined with hydrochloric acid is, in whole blood, available for neutralisation of added acid; for, with an increase in the amount of acid radicles present in the plasma, a shift of HCl occurs from plasma to corpuscles, leaving base available for bicarbonate formation.

TABLE I.—*Normal Cases.*

No.	Serum.			Plasma.		
	Na.	K.	Ca.	Cl.	P.	CO_2.
1	332	19·3	9·9	645	2·9	67·5
2	331	20·6	9·9	624	2·9	63·3
3	371	20·2	10·0	630	3·3	61·4
4	343	23·7	9·7	620	3·1	68·0

Diabetic Cases.

The most striking feature of the analyses in the diabetic patients (Table II.) is the absence of any appreciable reduction in the total bases of the serum, even in cases in which a very marked ketosis was present, and in which the alkaline reserve of the plasma showed a definite fall. In Cases 3 and 8, for example, the sodium and other bases of the plasma are at a normal level, though the bicarbonate content is reduced to about two-thirds of the normal figure. Though the reduction of the alkaline reserve of the plasma (plasma bicarbonate) suggests the picture of a general fall in the content of the plasma in basic radicles, such a depleted base content does not appear to be actually present. Similar findings are reported by Gamble, Ross and Tisdall[7] in a study of the acid-base metabolism during the ketosis produced by fasting, and of its effect upon the fixed bases of the blood. As is well known, large quantities of β-oxybutyric and di-acetic acid are formed in the body during a fast. Though a considerable fraction of the excess acid is excreted by the kidneys as free acid, and though a large proportion of the remainder leaves the body in combination with ammonia, a certain amount of fixed base is inevitably lost. In spite of this loss, the bases of the plasma were found to remain at an almost fixed level during the fast, though the plasma bicarbonate showed a definite reduction. Since there is no evidence of any increase in the inorganic acid radicles of the plasma to compensate for the diminution in HCO_3, the presumption is that the diminution of base normally bound as bicarbonate is compensated by an increase in base in combination with the ketone acids. Base which was previously present as bicarbonate is now circulating in combination with β-oxybutyric and di-acetic acids. The base content of the plasma tends to remain at a constant figure, though it is redistributed among the various acid radicles available, including the abnormal amounts of organic acids which are known to accumulate in the blood in these conditions. When we call to mind the manner in which other constituents of the blood tend to remain at a relatively constant figure under the varying environmental conditions to which the organism is exposed, this comparative fixity in the base composition of the plasma becomes less surprising. The loss of base in the urine is mainly met by drafts upon the tissues (Kingo Goto has, for instance, shown that, with long-continued experimental introduction of acids, the bones lose appreciable amounts of calcium carbonate); the bases of the plasma remain comparatively intact.

TABLE II.—*Diabetic Cases.*

Date in 1923.	No.	Serum.			Plasma.			Remarks.
		Na.	K.	Ca.	Cl.	P.	CO_2.	
	1	346	21·4	10·3	640	3·1	59	No K.
	2	297	11·8	9·2	690	2·1	18	K. + + + coma.
10/9	3	342	20·8	8·9	617	2·2	43	K. + +
1/10	,,	335	20·6	9·7	607	3·5	59	On insulin. K. ±
	4	—	17·6	9·2	651	1·9	31	K. + +
	5	313	20·0	10·6	577	3·6	58	K. +
8/10	6	—	18·2	8·2	552	2·5	16	In coma. K. + + +
19/10	,,	—	17·5	8·5	552	3·0	59	On insulin. K. +
	7	326	20·0	9·4	596	2·9	60	K. ±
	8	343	23·6	10·2	619	3·4	42	K. + +

K = ketosis.

There are, in addition, indications of certain minor adjustments in the diabetic. (1) The inorganic phosphate content of the plasma shows, in some instances, a definite reduction. Such a reduction in the plasma phosphate might indeed be anticipated in diabetic acidosis; since the excretion of monobasic phosphate by the kidney liberates base for combination with the excess of organic acids present, the phosphate of the blood being mainly present in the dibasic form. (2) The plasma chlorides tend apparently to lie at a lower level than in the normal; this diminution in the chlorides is presumably the result of a shift of HCl from plasma to corpuscles, basic radicles being liberated for combination with the excess of ketone acids.

The blood picture suggests, therefore, that in diabetic ketosis the base content of the plasma remains relatively constant. An extensive redistribution of base occurs, however, between the acid radicles; the bicarbonate of the plasma undergoes a great reduction, shared to a lesser extent by the phosphates and chlorides, the base thus liberated entering into combination with the excess of organic acids which are present in the circulation in this condition.

Advanced Nephritis.

Advanced nephritis of the azotæmic type is the disease par excellence in which marked alterations in the inorganic constituents of the blood occur. The primary factor underlying these changes is the inability of the kidney to excrete phosphoric acid with resulting accumulation of the acid radicle in the blood. In addition, it has recently been shown by Denis that very marked accumulations of sulphates in the blood may result from this type of renal defect. We have, therefore, in this disease, as in diabetes, a tendency to an excess of acid bodies in the organism, due, however, in nephritis, to failure to excrete a normal quantum of acids rather than to any excessive acid formation in the body.

The well-known alterations in the inorganic blood picture of the nephritic in the terminal stages of the disease are (1) a great increase in the phosphoric (and sulphuric) acid radicles, and (2) since acids circulating in the blood are of necessity neutralised, abstraction of base from the plasma bicarbonate for combination with the acid excess, the volatile carbonic acid resulting being excreted by the lungs. The phosphate accumulation and the resulting bicarbonate deficit are obvious in certain of the cases included in Table III. (2, 8, 9, 10). In addition, the table shows the low calcium content of the serum which is peculiar to idiopathic tetany and nephritis, and which in the latter condition appears to be connected with the degree of phosphate accumulation (2, 7, 9).

TABLE III.—*Nephritis.*

Date in 1923.	No.	Serum.			Plasma.				Remarks.
		Na.	K.	Ca.	Cl.	P.	CO_2.	Urea.	
	1	339	19·2	8·1	567	8·8	55	367	U.
	2	337	—	5·9	653	12·1	16	510	U. Died.
13/6	3	342	15·3	8·5	635	5·3	60	98	—
20/8	,,	341	15·6	8·9	514	6·7	85	120	—
17/9	,,	339	22·2	8·5	613	8·1	40	276	—
31/10	,,	—	19·9	9·1	618	6·8	48	154	—
	4	348	19·1	9·1	632	4·0	58	47	—
	5	346	22·2	8·2	620	4·9	60	75	—
	6	—	19·6	9·9	507	4·6	76	77	Int. obs.
	7	—	—	5·9	463	13·5	47	474	U. Died.
	8	—	23·8	7·9	620	8·1	33	261	—
	9	—	—	4·7	517	20·7	22	504	U. Died.
	10	318	32·8	—	568	9·4	41	309	U. Rec.

U = Uræmia. Int. obs. = Intestinal obstruction.
Rec. = Recovered.

The potassium content of the serum in these cases gives no support to the old theory that uræmia resulted from an intoxication with potassium salts. In one case only (10) is a definite increase in the serum potassium present. As has already been pointed out, errors may arise in the potassium estimation owing to the passage of potassium from the red cells to the serum. Though in this case, as in all others, the serum was removed from the clot within two hours of withdrawal of the blood, it is possible that under pathological conditions alterations in the permeability of the corpuscles may occur, and lead to a more rapid diffusion of potassium into the serum. In one case (3) the potassium content of the serum was on two occasions found to be at a low level.

The variations in the plasma bicarbonate are of considerable interest. Though the diminution in the bicarbonate of the plasma is reasonably ascribed to the accumulation of phosphoric acid in the blood, it has been pointed out by Denis and Minot[5] that the phosphate increase and the bicarbonate decrease are not in all cases proportional. This cannot, of course, be ascribed to any sparing of the base in combination with the bicarbonate, by accumulation of ammonia in the blood. All the available evidence is in favour of the view that no such excess of ammonia is to be found in the blood of nephritic patients, and since the main basic radicles apparently remain at a fairly constant figure, some form of redistribution of base must occur, in which acid radicles, other than the bicarbonate and phosphate, play a part. The redistribution actually found is well illustrated by Case 3.

In the second observation on this case (20/8/23) it will be noted that while the phosphate and the various basic radicles remain comparatively constant, the bicarbonate and chloride vary inversely. A rise in the bicarbonate content is accompanied by a fall in the chlorides. Though this might be interpreted as the result of a shift of HCl to the corpuscles, the explanation is probably more simple. The blood examined on 20/8/23 was withdrawn at the end of a period of continuous uræmic vomiting. It is already known that in the vomiting of intestinal obstruction an extreme fall in the chloride content of the blood occurs, and that at the same time the plasmic bicarbonate rises to a figure much above the upper limit of the normal. The mechanism of these changes is probably as follows. Large quantities of HCl are lost in the vomit; this HCl is derived in the process of gastric secretion from the NaCl of the plasma, the residual Na combining with carbonic acid in the blood to form bicarbonate. Under normal conditions, the excess bicarbonate thus formed passes into the intestines with the pancreatic and intestinal secretions, and combines with the gastric HCl to form NaCl, which can be re-absorbed. With vomiting the circle is broken and, while the chloride content of the blood falls, the bicarbonate rises. The condition is illustrated in Case 6, in which obstruction of the ileum was present. Here, early in the course of obstruction, the chloride is noticeably low and the bicarbonate somewhat above the normal level; the urea retention present in this patient is a constant feature of the severer types of obstruction, and is apparently the result of definite renal damage. In Case 3 vomiting ceased shortly after the second blood sample was examined, and at the time of the third observation (17/9/23) a more normal distribution of the acid radicles of the plasma was present. The bicarbonate was now reduced in proportion to the phosphate accumulation, and the plasma chlorides had returned to a normal level. The cessation of vomiting was accompanied by an extremely rapid gain in weight, which may have represented the restoration of the chloride and water content of the body to a normal figure, since the water content is largely determined by the amount of chlorides present in the organism.

Cases 7 and 9 are introduced as illustrations of the low plasma chloride that may be found in cases of nephritis in which excessive vomiting has occurred. In both the chlorides were determined by the more accurate method devised by Austin and Van Slyke.[6] Case 7 presents an interesting contrast to Case 2. In both patients approximately the same degree of phosphate retention was present. Case 2, in which practically no vomiting had occurred, shows extreme bicarbonate reduction with a slightly high plasma chloride, while in Case 7 the bicarbonate content is relatively little, the chloride greatly, reduced.

It would appear, then, that the vomiting of uræmia may be regarded as constituting a protective mechanism. By removal of HCl base is provided and the bicarbonate content is to some extent conserved in spite of phosphate retention. The vomiting is not the result of the reduction of the bicarbonate, since vomiting is by no means a marked feature of diabetic acidosis.

Eclampsia and Pre-Eclampsia.

The findings in the pre-eclamptic state and in eclampsia (Table IV.) are of little interest. Apart from the increased chloride content of the plasma and the slightly diminished plasma bicarbonate, the concentration of acid and basic radicles examined approximates closely to the normal. The high chloride content is presumably the consequence of the impaired chloride excretion which is known to occur in this disease. The reduction of the plasma bicarbonate is, with the exception of Case 5, hardly greater than that found in normal pregnancies. In Case 5, three severe fits had just occurred when the blood was withdrawn for analysis, and the patient eventually died as the result of a series of convulsions. A gross depletion of the alkaline reserve of the plasma was present, and was not apparently the result of a ketosis, since traces only of acetone and di-acetic acid were present in the urine. It is possible that the diminution in the plasma bicarbonate was the result of extreme muscular exertion incident to the convulsions.

TABLE IV.—*Eclampsia and Pre-eclampsia.*

No.	Serum.			Plasma.			—
	Na.	K.	Ca.	Cl.	P.	CO_2.	
1	340	20·4	8·7	660	2·9	49	—
2	354	22·0	9·5	660	3·6	51	Pre-eclamptic.
3	337	18·5	9·7	643	2·7	52	,,
4	314	20·9	9·9	645	3·0	49	,,
5	291	23·8	9·3	662	4·9	28	Immediately after 3 fits.
6	327	21·6	9·0	607	4·3	46	48 hours after 3 fits.

References.

1. Bell-Doisy: Jour. Biol. Chem., 1920, xliv., 55.
2. Donleavy and Van Slyke: Ibid., 1919, xxxvii., 551.
3. Kramer and Tisdall: Ibid., 1921, xlvii., 475.
4. Idem: Ibid., 1921, xlvi., 467.
5. Denis and Minot: Arch. Int. Med., 1920, xxvi., 99.
6. Austin and Van Slyke: Jour. Biol. Chem., 1920, xli., 345.
7. Gamble, Ross, and Tisdall: Ibid., 1923, lvii., 632.

SOME OBSERVATIONS ON THE SCHICK TEST.

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DURING the last 18 months we have been able to subject to the Schick test a large number of the patients admitted to the Edinburgh City Hospital, all the nurses, and most of the students attending the clinics. Our results, therefore, give some indication of the susceptibility to diphtheria of different groups of individuals, normal or suffering from one or other of the infectious diseases, and drawn from different classes of the population. It is to be regretted that the numbers of measles and whooping-cough patients are so small, but very few who were admitted escaped the test. The great majority of our scarlet fever patients were also tested. As regards the other infectious diseases only a few tests were made, the time at our disposal being limited.

Technique.—The toxin used was prepared by Dr. R. A. O'Brien and supplied from the laboratories of Messrs. Burroughs and Wellcome. The dose given was in all cases 1/50 of the minimum lethal dose for the guinea-pig, injected in 0·2 c.cm. of normal saline. This toxin gave very consistent results.

Reaction.—It seems unnecessary to describe the reaction. Those not familiar with it will find full descriptions in the papers of H. Mason Leete,[1] A. T. Glenny, K. Allen, and R. A. O'Brien,[2] and Gladys Ward.[3] Every test was controlled, the left arm being used for the injection of active toxin and the right for the inactivated toxin of the control. We worked together, one being responsible for the test and one for the control, a precaution which avoids the not unlikely errors of giving the injection into the wrong arm or of confusing the bottles containing the dilutions. As, with the exception of the student group, all our patients were in the same institution, we were able to watch the reactions closely, and every arm was examined on each of the first three days after injection and again on the tenth day. This we found very helpful in the study of pseudo- and combined reactions. The notes made on each examination have also been of use in determining the most suitable day for deciding whether a test is positive or negative, if, as must often be the case, only one examination can be arranged for.

It may be well to emphasise the fact that the test causes no discomfort to the patient, nor did one of the 4352 injections (tests and controls) raise any suggestion of septic inflammation. A few of the more intense reactions, certainly less than half-a-dozen, showed slight vesiculation. The only precautions taken were the scrubbing of the arms with ether at the site of injection and the dipping of the needles in alcohol between each test.

TABLE I.—*Total Cases* (*September, 1922, to February, 1924*).

Age-period in years.	Total.	Negative.	Positive.	Per cent. positive.
0–½	13	11	2	15·3
½–1	40	10	30	75·0
1–2	105	20	85	80·9
2–3	141	24	117	82·9
3–4	172	48	124	72·0
4–5	124	38	86	69·3
5–10	539	224	315	58·4
10–15	250	120	130	52·0
15–20	209	97	112	53·5
20–30	477	194	283	59·3
30–40	76	39	37	48·6
40–50	18	10	8	44·4
50–	12	9	3	25·0
Totals . .	2176	844	1332	61·2

This table includes all individuals tested, patients suffering from scarlet fever, measles, whooping-cough, surgical tuberculosis, erysipelas, chicken-pox, puerperal fever, meningitis, &c.; all the hospital nurses, maids of the domestic staff, students, resident medical officers, and children of the staff.

Table I. gives the results of all the 2176 tests made, and gives some indication how susceptibility varies with age. It is generally held that immunity is gradually acquired by exposure to small and repeated doses of the diphtheria virus, doses which are insufficient to produce the actual disease. For the first few months of life the infant is protected by natural antitoxin transmitted from the mother, but this immunity, well demonstrated by our figures, is seen to decline rapidly, and between the ages of 1 and 3 years susceptibility is at its highest. After the third year immunity gradually increases, and this improvement is maintained in our cases up to the fifteenth year. If we had to deal with the city population alone the decline would doubtless continue, but the next age-period includes an increasing number of persons from the country, children for instance sent in to boarding schools, domestic servants, and after the age of 18 years a solid block of our own nurses, many of whom are brought up in country districts where presumably the chances of exposure to subinfecting doses of diphtheritic infection are much less than in town. It is the nurses also, now supplemented by a large group of students, who help to account for the singularly high susceptibility-rate between the ages of 20 and 25. Thereafter, though the numbers are too small to be taken seriously, the natural decline reasserts itself.

Table II. shows the susceptibility-rates of our scarlet fever, measles, and whooping-cough patients, and interesting differences between the diseases may be observed. It will be noted that the total percentage of positive tests in scarlet fever is distinctly high. The figure, 62·1 per cent., is not very different from figures found in the same wards in 1920 and 1921 by Leete[1] and Ward,[3] 57·2 and 56·0 respectively. It is considerably higher, however, than the 45 per cent., reported by A. Zingher,[4] of 1200 scarlet fever patients in New York, or the 47·4 per cent. of T. E. Dickinson's[5] Manchester cases. Yet Zingher considers that his figure is a high one when compared with that of the normal children whom he has tested, and points out that it agrees with the undoubted clinical fact that scarlet fever patients are unduly susceptible to diphtheria. This susceptibility, he explains, may be due to the destruction of the natural antitoxin during an attack of scarlet fever. Poliomyelitis is said to have a similar effect. It will be seen in our table, however, that at the most susceptible age-periods, from six months to three years, measles gives an even higher positive rate than does scarlet fever.

So far as our own cases are concerned, we are inclined to explain the high susceptibility noticed in scarlet fever by the character of the population dealt with. Our scarlet fever patients are a fair sample of the whole population of Edinburgh, as it has been the custom to isolate at least 95 per cent. of all the cases in the city. On the other hand, only a small minority of the measles and whooping-cough cases are sent into hospital, and these usually come from the poorest homes in the city. The whooping-cough children, in particular, may be said to represent the slum population. Zingher[6] has shown that the children in the poorer class schools in New York have a much lower susceptibility-rate than those from the schools in better districts. As a result of overcrowding and bad hygiene at home the class from which our whooping-cough patients come begins very early to suffer exposure to diphtheria and, as a result, acquires immunity very rapidly. Our measles patients, though mainly of a very poor class, are a little more mixed, and obtain immunity somewhat more slowly, though much more rapidly than does the scarlet fever group, as will be seen by a study of the percentage of positive tests at each age-period.

TABLE II.—*Percentage of Positive Tests in Scarlet Fever, Measles, and Whooping-cough.*

Age-period in years.	Scarlet fever.		Measles.		Whooping-cough.	
	No. tested.	Per cent. positive.	No. tested.	Per cent. positive.	No. tested.	Per cent. positive.
0–½	3	33·3	3	33·3	4	0
½–1	9	77·7	16	83·7	14	64·2
1–2	31	80·6	40	90·0	32	68·7
2–3	78	82·2	26	92·3	32	78·1
3–4	113	77·8	30	70·0	24	45·8
4–5	91	76·9	14	64·2	9	33·3
5–10	471	61·3	27	44·0	19	26·3
10–15	235	53·1	0	—	0	—
15–20	69	42·0	1	0	0	—
20–30	57	47·7	7	71·4	0	—
30–40	29	51·7	0	—	0	—
40–50	12	41·6	0	—	0	—
Totals ...	1198	62·1	164	73·7	134	55·9

TABLE III.—*Percentage of Positive Tests in Students, Nurses, and Hospital Ward and Laundry Maids.*

Age-period in years.	Students.		Nurses.		Maids.	
	No. tested.	Per cent. positive.	No. tested.	Per cent. positive.	No. tested.	Per cent. positive.
15–20	0	—	91	70·3	28	42·8
20–30	268	63·0	97	62·8	22	31·8
30–40	22	45·4	6	33·3	5	39·9
40–50	3	66·6	0	—	0	—
Over 50	0	—	2	50·0	0	—
Totals . .	293	61·7	196	64·7	55	38·1

Students, Nurses, and Staff.—Table III. gives our results for three groups of adults, nurses, students, and hospital domestic staff respectively. The close correspondence of the figures relating to the nurses and students in the same age-period, from 20 to 30 years, is very interesting. All, no doubt, have been brought up in reasonably good hygienic surroundings and many are from country districts. The susceptibility-rate at this age seems unduly high, 63 per cent., but it accords with that of 65 per cent. found by O'Brien[7] and his fellow-workers in a group of 160 medical students. The much lower rate shown by the hospital maids seems to imply that social conditions have more influence than age in determining the development of immunity. A considerable proportion of our domestic staff comes from mining villages in the vicinity of Edinburgh.

Surgical Tuberculosis.—We took the opportunity of testing 59 patients suffering from this condition and found that, although no fewer than 42 were under 15 years of age, the susceptibility-rate was as low as 37·2 per cent. This group included children of all classes, though no doubt the majority were from poor homes. Ward [3] found that the percentage susceptibility was considerably higher in acute than in chronic diseases, and these figures, though too few to be of real value, appear to support her contention.

The gradual increase in the percentage of pseudo-reactions as age advances is well shown in Table IV. It would appear to justify two deductions. In the first place, the number of pseudo-reactions in children of under 5 years of age is so very small that it would appear quite unnecessary in their case to trouble with a control test. This test, indeed, might well be omitted also in the succeeding five years of life, the risk of error being still very slight, and the worst that could happen being the unnecessary immunisation of three children in every hundred. The second deduction is that, with so little susceptibility to bacterial protein at these ages, troublesome reactions to the immunising injections are most unlikely to occur. That in fact they do not occur in young children is the experience of all who have had much to do with immunisation work. We were, therefore, able to advise the Edinburgh public health authorities that they could safely lessen the amount of work by dispensing with control tests, and that it was extremely unlikely that they would be troubled with severe reactions. In the schools which they have since protected they have found this to be the case. It is satisfactory to know that those who require immunisation most—i.e., the children—are so little upset in the process. As regards adults, unless, as is the case with nurses, their duties bring them into contact with diphtheria, there is not so much to be gained by inoculation and, if they present pseudo-reactions, it is a question whether immunisation is worth while, as it is in this class of persons that troublesome reactions are most likely to occur.

TABLE IV.—*Pseudo-Reactions: 2176 Tests.*

Age-period in years.	Per cent. of pseudo-reactions.	Per cent. of pos. Schicks.	Age-period in years.	Per cent. of pseudo-reactions.	Per cent. of pos. Schicks.
0–5	0·86	74·6	30–40	32·8	48·6
5–10	3·1	58·4	40–50	38·8	44·4
10–15	7·6	52·0	50–	41·6	25·0
15–20	26·7	53·5			
20–30	31·4	59·3	Totals..	13·0	61·2

As all our cases were controlled there was no difficulty in recognising pseudo-reactions. The real trouble, however, was, if a pseudo-reaction was present, to determine whether the Schick test was positive or not. To make certain an opinion cannot be given for ten days, and in some of our cases it was necessary to wait even longer before coming to a final decision. Where a combined reaction is present it leaves much more definite pigmentation and desquamation than is to be seen on the control arm, and the diagnosis depends on the contrast between the reactions on the two arms at about the tenth day. We found in our nurses and students that combined reactions were by no means uncommon, and we have been able to satisfy ourselves that, after immunisation, this "positive and pseudo" reaction disappears, the next Schick test resulting in absolutely identical appearances on both arms and being classified as "negative and pseudo." We are therefore compelled to disagree with Dr. O'Brien's suggestion that cases presenting a pseudo-reaction are immune and therefore do not require toxin-antitoxin injections. As was to be expected, pseudo-reactions were much more common in persons already sensitised to bacterial protein. Of 170 individuals who gave a definite history of having been treated at some previous date with horse serum, either antidiphtheritic or antitetanic, 67, or 39·4 per cent., were pseudo-reactors as against only 13 per cent. of all persons tested.

The Test in Acute Diphtheria.

As a matter of interest we tested 55 diphtheria patients on admission and obtained a definite positive result in 54 of them. All tested had definite clinical and bacteriological diphtheria, and it was naturally expected that all would be positive. It is interesting to note that the subsequent course of the one negative case led to a suspicion that an error in diagnosis may have been made, and that in reality the case was one of septic infection occurring in a carrier.

The Test in Relation to Previous Attacks of Diphtheria.—Of 157 patients who gave a history of having suffered previously from diphtheria, 46·4 per cent. had positive reactions and were regarded as being susceptible to the disease.

Effect on Test of Recent Treatment with Antitoxin.

In the course of our work we subjected to the test 37 individuals who for various reasons had received prophylactic injections of antitoxin within three weeks prior to the test. These patients naturally are not included in our tables. All were negative except one who gave a definite positive reaction 12 days after a 500-unit dose. Clinically, our hospital records do not show an instance of any patient so protected developing diphtheria in less than 22 days after such a dose, though we understand laboratory work goes to show all antitoxin may have disappeared from the blood in 12 days. For all practical purposes we think a prophylactic injection may be trusted to give protection for three weeks.

Incidence of Diphtheria in Positive and Negative Cases.

During the time we have been engaged in this work 13 individuals, who had been tested, contracted diphtheria, some in hospital and some at a later date. Of these, 11 had given a definite positive reaction. In the two others the reaction had been noted as negative, but in one of them it was found that the test had been made within a fortnight of an antitoxin injection and was therefore of no significance. The remaining patient, one of our own nurses, had originally given a positive test, had then been immunised, and some months later re-tested. On this occasion a slight reaction was noted on both arms at 24 hours and nothing convincing thereafter. She was classed as negative and later took diphtheria. It is, of course, possible there may have been a very slight positive combined reaction, but it seems reasonable to regard this case as one in which the test definitely failed.

Delayed Reactions.

The possibility of delayed reactions is of some importance, especially if only one reading of the test can be arranged and if that reading is made too early. The suggestion has been made that 95 per cent. of readings made at 24 hours are proved to be accurate. We consider this percentage, as judged by our own experience, far too high. We have often had to wait 48 hours for any real indication of the ultimate result. In feeble and badly nourished children, in particular, the reaction appears to come up slowly. It will be sufficient to give the figures relating to the whooping-cough patients. Of the 75 cases ultimately classed "positive," only 17 showed anything on the arm at 24 hours, by 48 hours 37 had become positive, by 72 hours 62, the remaining 13 reactions appearing in most cases at 96 hours, but in one or two even later. It may be admitted that this group consisted of very young and feeble children, many of whom were suffering from broncho-pneumonia. The figures, however, show that definite conclusions cannot be drawn even from 72-hour readings.

Anomalous Reactions.

With one particular batch of inactivated toxin we obtained the somewhat disconcerting result of a reaction on the control arm only. We were able to satisfy ourselves that this anomaly was not due to any mistake in the inoculations or to using the wrong bottle for the test. In all 13 reactions occurred on the control arm alone and in 18 more the control arm showed a much more marked reaction than the others. Béguet and Parrot [8] have described similar reactions which they term "paradoxal." In 100 children they observed 21 such results, chiefly in children of over 10 years of age. They conclude that the heating of bacterial proteins causes a definite increase of their toxicity for certain subjects. This hardly explains the rarity of this curious reaction or the fact that, in our experience, it was only observed in one group of individuals who had been tested with the same batch of inactivated toxin. In any case, a phenomenon which has so seldom been reported may be regarded as of little consequence.

Conclusions.

From the study of our results we have come to the conclusion that the Schick test might be omitted so far as children of under school age are concerned. Such a high proportion of these give positive reactions that it would be reasonable to proceed with immunisation at once. In older children, up to the age of 10 years, it seems unnecessary to make use of the control test. It is highly desirable to simplify the procedure in every way so that as few injections as possible have to be made. If it is possible to arrange for two readings of the reaction these are best made on the fourth and tenth days. If one reading only is practicable the eighth day appears suitable, and the first immunising dose can be given at the same visit.

We have not in this paper touched the question of immunisation which is, of course, the logical sequence of the Schick test. The immunisation, however, of all the hospital nurses, who proved Schick "positive," has been carried out by one of us and the results so far have been promising. We require more time for the study of the after-history of the protected persons, but it is hoped that a preliminary note on the effect of the toxin-antitoxin inoculations will soon be ready for publication.

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TREATMENT OF SYMPTOMS IN INOPERABLE CANCER WITH LIQUOR POTASSÆ.

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I SHOULD like to bring to the notice of my colleagues some cases of inoperable malignant disease which I have been treating for some months with liquor potassæ.

CASE 1.—Mrs. B., aged 40, has had a history of gastric disturbance over a period of 12 years. Four years ago she noticed a "lump" in her left side below the rib margin. This gradually enlarged and she began to have attacks of pain and vomiting, which became more severe until December, 1922, when she was sent into hospital for operation. After admission she had a severe hæmatemesis. At operation an inoperable cancer of the pylorus was found, and a gastro-enterostomy was performed as the pyloric opening was almost closed. She was discharged in February, 1923. During the year the symptoms continued, and the pain was so severe as to interfere with sleep. There was increasing weakness and cachexia. On Sept. 10th, 1923, I found the patient in great distress, crying out with pain and with almost continual vomiting. She was very emaciated and her complexion was greyish-yellow. The abdomen was rigid, and there was a hard, irregular mass about 2½ inches in diameter in the left hypochondrium. Above and median to the mass some small separate nodules were palpable. There was marked tenderness and dullness in the epigastrium, and also over the mass. I gave morphine four-hourly for three days without much relief. On the third day I found her delirious with pain and exhaustion, and prescribed the following: ℞ Liq. potassæ, ♏xv.; pot. nit., gr. x.; aq. menth. pip., ad ℥ss.; ʒss., t.i.d., ex aq. a.c. The result of the first dose was dramatic. The patient slept many hours without waking, and next day the pain was very much relieved and there was no vomiting.

I have continued with this treatment for the past four months with the following results. The pain has gradually lessened in severity and frequency, until now it is negligible. There has been no vomiting whatever since Sept. 13th. The small nodules disappeared within a fortnight, and the large mass is now reduced in size by more than half. In the morning, when the stomach is empty, it is not palpable at all. The patient's general condition has steadily improved. She has gained in weight week by week. Her complexion has become normal. She is able to walk three miles without any discomfort. Her appetite is good, and she can eat almost any food without pain. After the first month I increased the dose of liq. potassæ to ♏xx. and later to ♏xxv. On Dec. 10th I reduced the dose to ♏xv. For the past few weeks the gain in weight has been maintained with administration of the medicine every alternate week only. The patient assures me that any pain she has had since September has been due entirely to flatulence.

CASE 2.—Mrs. C., aged 36, had a radical operation for cancer of the breast in January, 1923. When I saw her on Nov. 20th she complained of "rheumatism" in the back, in the interscapular region, and in the shoulders and right arm. She also complained of a lump in her neck. On examination I found a hard, immovable mass in the lower part of the posterior triangle of the neck. The upper border extended about 1½ inches above the clavicle, and the lower border could not be palpated beneath the clavicle. Immediately above the mass were some hard nodules—defined and movable. The right shoulder was raised and the head held slightly towards that side. She looked ill, and her complexion was very sallow.

She was treated with potassium by mouth for one month, and during that time her general condition improved enormously. Her appetite improved at once, she grew much stronger, was able to get about out of doors, and her skin lost its sallow tinge. In three weeks the movable glands had disappeared, but I found it very difficult to determine whether the mass extending beneath the clavicle had reduced in size. The pain was not much relieved.

CASE 3.—Mrs. W., aged 69, had a history of pain and vomiting after meals, and also of frequent acute attacks of pain and vomiting without relation to food for some years. In the summer of 1921 operation was advised, but she refused to go to hospital. When I saw the patient on Nov. 29th, 1923, she was exceedingly emaciated and of a deep yellow colour. She was too weak to raise herself in bed, did not recognise the members of her family, and was alternately comatose and delirious. Her pulse was weak and irregular. There was a subnormal temperature, vomiting was frequent and severe—"coffee-ground." She had not slept for five days and nights. On examination the emaciation was extreme. The abdomen looked "lumpy," and the skin over it wrinkled and deeply pigmented. On palpation there was marked resistance and tenderness in the epigastrium, and an irregular, hard, nodular thickening over the abdomen. There was no free fluid. There was no mass palpable in the left hypochondrium, but extensive dullness on percussion. Liquor potassæ was given, and after the first dose the patient slept 14 hours, and awoke without pain or sickness and mentally clear. During the next three days she had two attacks of vomiting, but they were not so severe, and after six doses they ceased altogether. Her pulse grew stronger daily, and she had very little pain. At the end of a fortnight she was able to sit up in bed unsupported, was hungry, and having good nights. A month later the epigastric tenderness had disappeared. There had been no vomiting whatever. The complexion was almost clear, and the skin of the face less wrinkled. On Dec. 28th following she had an acute attack of pain and some vomiting, which was quickly relieved with morphine.

Although none of these cases is cured, they have all shown such remarkable improvement under the administration of potassium in this form that I think further investigation and wider application of the treatment than my own work permits is merited. The results generally, and the almost startling relief after the first dose of liquor potassæ, have led me to consider whether there may not be some specific effect of potassium upon cancer growths. It has been shown that "the potassium content of the red corpuscles of cancerous patients is approximately double that of healthy persons," and "chemical analysis of 300 tumours showed preponderance of potash salts and nucleo-protein content, associated with high virulence and rapid development."

The question arises whether potassium be a natural agent used by the body to control the perverted metabolism of tumour cells.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

A MEETING of this section was held on May 23rd, Dr. MAJOR GREENWOOD being in the chair.

A resolution was carried expressing the profound grief of the section occasioned by the death of Dr. Richard J. Reece, their President, and their deep sympathy with Dr. Reece's family and colleagues. On the recommendation of the Council of the section it was resolved to hold the ordinary meetings of the section in the session 1924–25 at 5.30 P.M. on the fourth Thursdays of the month.

The Elucidation of Cancer.

Dr. LOUIS W. SAMBON read a paper on this subject. He gave an account, illustrated by numerous lantern slides of classical sculptures, of the knowledge possessed by the ancient civilised races of malignant disease, and then indicated the analogies between cancer and certain diseases, such as elephantiasis, of parasitic origin. He described the field investigations he had recently carried out in parts of the province of Romagna (corresponding roughly with the eastern part of the departments of Emilia and Tuscany, in the neighbourhood of Forli and Fiesole) which led him to conclude that cancer was a parasitic disease, possibly caused by a nematode of which the cockroach was an intermediate host or carrier. Dr. Sambon dwelt on the importance of Fibiger's researches on the gastric carcinoma of rats caused by eating infected cockroaches, and entered a strong plea for the extension of field investigations such as that he had just completed. In his opinion, it was by such field work rather than by the comparison of statistics that the ætiology of cancer would be elucidated.

The CHAIRMAN said that the very remarkable differences in rate of mortality from certain forms of cancer which distinguished England and Wales, Italy and Holland, were at present the object of an international inquiry, and the national representatives would certainly take note of Dr. Sambon's results.

Dr. R. DUDFIELD said that Dr. Sambon had given reasons for a reconsideration of the question of "Cancer Houses," and he (Dr. Dudfield) intended to pay special attention to this point.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING of this Association was held at the Elizabeth Garrett Anderson Hospital on May 13th, Miss M. CHADBURN presiding.

Bacteriophage.

Dr. E. LEPPER read a paper on Bacteriophage, with lantern illustrations. She showed cultures demonstrating the chief characteristics of a bacteriophage—namely, (1) inhibition of bacteriological growth, (2) lysis of bacilli, (3) filtrability, (4) resistance to heat, (5) reproduction when incubated with a sensitive, growing organism, (6) the production of bacteriological variation. The bacteriophage used in her experiments was isolated from the urine of a woman suffering with bilateral pyelitis due to *B. coli*. It is lytic for the organisms grown from the urine of the same patient, and from some other strains of *B. coli* as well. She showed lantern slides illustrating the marked immediate effect of a strong bacteriophage on a sensitive culture. She found that a dilution of 1 in 100 bacteriophage reduced the number of colon bacilli present in an emulsion from 2500 per drop to 10 per drop in 15 minutes; a dilution of 1 in 10 of the same bacteriophage took 1·5 minutes to produce the same result. She suggested that such a bacteriophage might be introduced into the pelvis of the kidney in cases of *B. coli* pyelitis when the causative organism was sensitive to its action.

Dr. IRIS FOX read a paper on the

Use of Vaccines and Sera.

She discussed the attitude to this subject of the medical profession, noting the acknowledged value of prophylactic vaccination in certain specific infections, and its apparent failure in certain other specific diseases, and concluded that the possibility of adequate protection against non-specific invasions was, on the whole, considered unproven. There was greater general confidence in the prophylactic rather than the therapeutic use of vaccines. Passive immunisation with specific serum was accepted as the unique curative or prophylactic measure in diphtheria or tetanus. Miss Fox expressed her own belief in the future of artificial immunisation. We had here a powerful—perhaps the most powerful—weapon against disease, but had not yet the knowledge to use it properly. For example, there was the widest variation in the doses given and the reactions arrived at. In the case of prophylactic inoculation against the enteric fevers the large initial dose was given of 500 million *Bacillus typhosus*, with 250 million each of *B. paratyphosus* A and B. An example of much higher initial dosage was the method of inoculation against pneumonia used in South Africa by Spencer Lister, who gave a first injection containing 6000 million each of four different pneumococcal strains. Every kind of vaccine had been, and still was being, given on a large dose system in which a slight or moderate constitutional reaction was desired, and, on the other hand, in comparatively minute doses, aiming at immunisation without the production of any general disturbance. There was, she thought, an increasing tendency to use small doses in treatment. There was just as much difference of opinion concerning the interval between injections and the importance of the negative phase. It was difficult to determine the relative value of different techniques in our ignorance of the immunising processes of the body. Laboratory attempts at exact measurement of immunity production had unfortunately been of no more help than had vague clinical impressions as to the value of this or that proceeding. Protection against, or cure of, disease in the animal body was not always proportionately indicated by a high serum content of demonstrable antibodies, such as agglutinins. It seemed likely that specific antibody content was not the only factor in immunity, and much work, and probably considerable alterations in our conception, was needed before specific therapy could be properly controlled. Miss Fox proceeded to discuss the question of specific and non-specific therapy and the collection of material for bacteriological diagnosis. She dealt briefly with active immunisation against diphtheria, which had passed the experimental stage and was being practised with great success in America; also with the typing of pneumococci and with the beneficial results, in the Rockefeller series of cases, of the specific antiserum in Type 1 cases. She referred to the work of Miss Mary Cowan on the rough and smooth varieties of the hæmolytic streptococcus and to the possible clinical application of this work.

Dr. MARY COWAN said that from a single strain she had been able to isolate a rough and a smooth type of hæmolytic streptococcus, of which the smooth was virulent and the rough was not. She tried to immunise mice and rabbits, and in mice was able to give immunity by a serum produced from the rough to those infected with the smooth variety. In rabbits this was only possible in a very small percentage. When using a smooth strain alone she had 66 per cent. of successes. The serum of protected rabbits gave great variation in agglutinin content; some animals which had agglutinisation of a very low titre lived, and others with a high titre died. No relation was found between agglutinins and useful antibodies.

EDINBURGH OBSTETRICAL SOCIETY.

A meeting of this Society was held on May 14th, Prof. B. P. Watson, the President, being in the chair.

Pelvimetry.

Dr. S. J. Cameron and Dr. J. Hewitt (Glasgow) communicated a note on pelvimetry. Dr. Hewitt, who read the paper, pointed out the fallacies attending the performance of the bimanual examination as described and illustrated in the text-books. He considered the Munro Kerr manœuvre, in which the fingers of one hand, in a position of semi-supination, were introduced into the vagina, while those of the other attempted forcibly to depress the head into the brim—a physical impossibility. In cases of small pelvis associated with a pendulous abdomen, one hand alone could not press the head down, and, further, the thumb was not in the right position to estimate the degree of overlap at the pelvic brim. Ballantyne, in 1921, had recommended the help of an assistant in the performance of the bimanual examination in these circumstances. They therefore recommended that the fingers should be passed into the vagina with the hand and forearm in the position of full supination. The tips of the examining fingers then came into contact with the fœtal head, and not the lateral side of the fingers as in the illustrations in the text-books. If the head was now pressed down into the pelvis by an assistant the sensitive finger-tips were able to estimate the degree of descent, and after this had been done it was possible for the free and unrestricted hand to estimate the degree of overlap at the brim.—The President expressed complete agreement with the authors of the paper.

Dr. Haig Ferguson said that the fingers in the vagina also helped to indicate that the head was descending in the proper axis.

Dr. William Fordyce emphasised the importance of flexion and head moulding when attempts were made to estimate the relative proportion between the fœtal head and the pelvic brim.

Dr. Fraser Lee and Dr. R. W. Johnstone also took part in the discussion.

Dr. Cameron communicated a record of

One Hundred Successive and Successful Cases of Cæsarean Section.

He briefly described the technique which experience had led him to employ in the performance of this operation. Having seen cases return to hospital with large ventral hernia in which approach to the abdomen had been obtained by means of a mid-line incision, he had now abandoned this in favour of the approach through the rectus, with most satisfactory results. He preferred catgut to silk in the closure of the uterine wound on account of the fact that silk was not absorbed ; it gave rise to adhesions and he had seen a sinus, through which menstruation took place, due to the presence of unabsorbed silk in the uterine wall. It was well known that pathogenic organisms might lurk in the skin, however thoroughly it had been prepared before operation, and for this reason he set aside the knife with which the primary incision was made and covered the skin edges with gauze. He believed in leaving adhesions alone and often used the transverse fundal incision. 1 c.cm. of pituitrin was injected directly into the body of the uterus. After losing a number of cases from causes attributable to the anæsthetic, chloroform was now used as a routine. Cases complicated by bronchitis, catarrh, or emphysema stood the administration of ether badly, and chloroform in careful hands had given better results. Should signs of chest trouble be present these patients were placed in a steam tent immediately after operation, and the benefit they obtained from this line of treatment was often remarkable. All cases after operation were placed in the Fowler position.

Dr. Haig Ferguson, Dr. Fordyce, and Dr. James Young took part in the discussion.—Dr. Camreon, in reply to questions, pointed out that by a successful Cæsarean section he meant one which was successful from the maternal point of view. Fœtal deaths occurred now and then, as in general obstetrics. In his later cases he had perhaps been more careful in the selection of his patients.

Dr. E. Farquhar Murray (Newcastle-on-Tyne) read a paper on

Cæsarean Section.

His observations were based on an operative experience of over 100 cases, with special reference to clinical and pathological findings in cases of obstructive labour and describing a new operative technique in infected cases. This paper recorded an experience of 116 sections, the majority of which were performed to anticipate or relieve obstructed labour due to pelvic contraction, the others for less common indications. The operation, which takes from 12 to 20 minutes, was briefly described. The gaping mouths of sinuses seen while incising the uterus had suggested to the author that a safer method of approach must be adopted in septic or suspect cases. The placenta was found posterior or anterior in proportion of 4 to 3, but in cases where section had previously been performed the proportion was 3 to 1, suggesting that the residual scar-tissue contributed to this result. Rupture of an old scar was a negligible risk. It happened in one case on whom four previous sections had been performed. The complete ovum was found in the abdominal cavity, and the uterus, firmly contracted, was re-sutured, the mother making a good recovery. The previous obstetric histories of patients with contracted pelves were often instructive. One 7-para reported that her four children delivered alive with forceps died between 6 and 12 weeks from fits. Primiparæ having no antecedent obstetric history were entirely dependent for their safety on a pre-maternity examination. Contraction of the pelvic outlet he had found to be less common, but more treacherous than at the brim. Discussing the operative findings, Dr. Murray pointed out how Bandl's ring frequently corresponded with the position of the child's neck. The lower uterine segment was thin in cases of over-distension—sometimes no thicker than wet blotting-paper—and in two cases blood was extravasated under the peritoneal coat, indicating that it was on the point of rupture. The damage from trauma, to which the lower uterine segment, cervix, and vagina were subjected, and which results in obstructive labour from natural forces, was not sufficiently recognised. Referring to the placenta and membranes, it was noticeable that in a case obviously infected at a late stage the chorion appeared yellow and pultaceous in the lower areas and could not be stripped off, suggesting that infection was tracking up in this layer outside the amnion. The liquor in such a case was, as a rule, scanty and contained meconium ; in a number of cases it was definitely offensive. Many hours in labour, much interference, or the presence of Bandl's ring he looked upon as strong presumptive evidence of infection. A discharge developing during labour, after rupture of the membranes, was almost certain proof. Offensive liquor found on opening the uterine cavity, or a culture obtained from liquor per abdomen, was proof positive. Dr. Murray described his operative technique in infected cases in detail. His practice has been to have the patient placed in the lithotomy position and the vagina then douched out with eusol. The uterus is eventrated and held well forwards, and after being packed round with swabs, the edges of the abdominal incision are clipped together over the swabs. Towels are wrapped round the uterus outside the abdomen and are further protected by a layer of rubber sheeting. The fundus is incised transversely and the child extracted. An assistant holds the anterior and posterior walls apart, and thus prevents separation of the placenta until the muscular funnel lined by the placenta and membranes has been well douched out with eusol, the fluid escaping readily at the vagina. The placenta and membranes are then pressed down into the vagina with swab pressure, and extracted from below. The cavity is flushed again with eusol and the uterus and abdomen closed. The peritoneal cavity is well protected, and the uterine incision avoids the very vascular placental site, which is protected from infection until the membranes have been well flushed. Extraction of the placenta from below prevents the more highly infected membranes in the lower pole from being dragged over the placental site and wound edges. This is only possible if the os is half or more dilated. This technique has been adopted in five cases, but in one the placenta had to be extracted through the abdominal incision owing to insufficient dilatation of the os. One very late case died. All the cases were believed to be infected, although proved by cultures in two only, both of whom survived. Four live children resulted, the fifth being dead at the time of operation. Dr. Murray then proceeded to describe his results of Cæsarean section for various conditions such as placenta prævia, occipito-posterior cases, and tumours complicating delivery. The question of accessibility and vascularity would decide whether to attempt the removal of fibroids at the time of section or to postpone till involution was complete. In infected cases the latter course was certainly the wiser one to adopt.

Prof. WATSON said that he was much impressed by the details he had heard from Dr. Murray of his technique in septic cases, and wished to congratulate him on the way in which he had tackled this difficult problem.

Dr. JOHNSTONE said that he would be anxious to use Dr. Murray's methods when next he had the opportunity.

Dr. FORDYCE was interested particularly in the removal of the placenta and membranes from below, and questioned the efficacy of the intra-uterine douche. In one case quoted by Dr. Murray at the post-mortem examination organisms had been found in the uterine musculature and here douching would have been ineffective.

Dr. YOUNG, Dr. FERGUSON, and Dr. HUGH S. DAVIDSON also spoke.

Exhibition of Specimens.

Dr. W. T. THEODORE HAULTAIN showed an unusual broad ligament cyst with a twisted pedicle. A specimen of a double uterus, which had given rise to dysmenorrhœa, was demonstrated by Dr. MURRAY.—Dr. CAMERON showed two cases of chorion epithelioma, one showing scattered areas of growth in the uterine wall and in the other the tumour was found in the cervix, the symptoms and signs being suggestive of a rapidly advancing cervical carcinoma.—Dr. FERGUSON showed two specimens of ovarian cyst with twisted pedicle and hæmatosalpinx.—Miss G. HERZFELD showed a large mass of fibroids which filled more than half the abdomen. The upper pole of the tumour was hidden behind the left costal margin and the difficulties encountered at operation were briefly described. She showed also a photograph of a minute adenomyoma of the uterine wall. In the course of an operation a puckering and roughening of a small area of peritoneum on the posterior surface of the uterus was noted, and on removing a portion and subjecting it to microscopic examination the tissue revealed itself to be an adenomyoma.

CARDIFF MEDICAL SOCIETY.

A MEETING of this Society was held on May 13th, with Mr. WILLIAM MARTIN, the President, in the chair.

Dr. HERBERT EVANS read a paper on

Heart-Block.

Beginning with a definition which included all varieties of intracardiac type, he proceeded to give a description of the anatomical points involved and of experiments carried out on the hearts of the frog and tortoise, whereby several kinds of block had been produced. This was followed by a classification into types according to the anatomical lesion or grades from the clinical standpoint. These were illustrated by a series of lantern-slides and electrocardiograms, and their usefulness in giving the exact location of any interference in the conduction system was demonstrated. In discussing the ætiology a large number of cases were referred to, and the predominance of males over females was noted. The majority of cases occurred in men over 45. Of the causative conditions chronic myocarditis was the commonest, then came chronic valvular lesions (mitral stenosis), chiefly rheumatic, arterio-sclerosis, syphilis, acute infections, and over-administration of digitalis. Stress was laid on the fact that heart-block was but rarely a separate entity and should be regarded as a part of other cardiac involvement. There were very few symptoms associated with heart-block, and these only occurred in the high grades; they were due to the slow ventricular rate which, when below 20 beats per minute, caused cerebral anæmia, a suspension of the mental functions, and a possibility of fits. This constituted the Stokes-Adams syndrome, which, however, was not synonymous with heart-block since the majority of cases never had fits. In addition the general nutrition suffered and the mental aspect became affected. The symptoms usually met with were those of the associated cardiac lesion, which should be sought for in all cases.

The diagnosis of complete block was generally straightforward. That or the other types was best arrived at by means of special instrumental methods, although there were often suggestive signs —e.g., a pulse-rate below 50, dropped beats, which had to be distinguished from premature contractions. A sudden drop in pulse-rate during the course of or during convalescence from acute infections was always suggestive. In auricular flutter, a condition in which block frequently existed, the pulse-rate was often rapid. From the prognostic point of view, heart-block per se did not kill. The general condition of the cardiac muscle had to be taken into account. It was only a sign that the conducting system had become involved. High-grade block with serious cardiac lesions rendered the prognosis grave. Danger was likely to arise during the change from a partial block to complete block, and also during the state of "status epilepticus," or when arising during convalescence from an exhausting illness. Cases of block were known to live for many years. The greater number of cases died from general cardiac failure, with its accompanying signs. Treatment was for the most part singularly ineffective. Cases in which syphilis was the possible cause were likely to receive great benefit from suitable treatment. During attacks of block rest in bed was essential. Chronic cases were often able to carry on, but usually their power was limited. In the mild cases digitalis could be safely given, although the degree of block was increased. No treatment for the fits had yet been found. Atropine had been suggested. Patients should be warned of the possible dangers that might arise from these fits.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

JOINT MEETING OF THE SECTIONS OF MEDICINE AND SURGERY.

THE DIAGNOSIS AND TREATMENT OF INTRATHORACIC SUPPURATIVE CONDITIONS.

A JOINT meeting of the Sections of Medicine and Surgery was held in the Royal College of Physicians of Ireland on May 9th. The President of the Medical Section, Dr. T. GILLMAN MOORHEAD, was in the chair.

The PRESIDENT, in opening the discussion, referred to the difficulty in diagnosis of post-pneumonic empyema arising from the fact that the physical signs so often differed from those which were usually accepted as characteristic of fluid in the chest. In many cases loud tubular breathing, and even crepitus, could be heard over encysted collections of pus. In every case of doubt exploratory puncture should be performed. This procedure he regarded as absolutely free of risk, in spite of the alarming and dramatic reports of sudden collapse due to pleural shock which were from time to time recorded. Most of the text-books insisted that anæsthesia was dangerous, and as a matter of fact it was very seldom required, but in dealing with young children he had often found that general anæsthesia was necessary, and he had never experienced the least distress or harm to the patient as a result. He expressed the opinion that, except in cases of very small empyema, surgical treatment was always essential. In the past he had tried again and again to cure cases by repeated aspiration, coupled with vaccine-therapy, but never with good results, and in consequence he was an absolute disbeliever in this method of treatment. In acute cases following pneumonia aspiration might be required to tide over the acute period, but as soon as possible an opening operation should be performed. He then referred to some cases of acute chest arising from the rupture of small pleural abscesses into the general pleural cavity, a condition with which one had become familiar during the influenza epidemic, and which had proved the cause of sudden death in many cases during the course of that epidemic. In conclusion he dealt with the diagnosis and treatment of pulmonary abscesses.

Sir W. DE COURCY WHEELER said that he would not touch on the ætiology or the bacteriology, although surgical treatment depended largely on the particular organism found in empyema. He attached some importance to the maintenance of a negative pressure and airtight drainage in cases of empyema. In young children he employed the method recommended by Poynton and Reynolds with his own modification of the trocar and cannula. The trocar and cannula were plunged into the chest between two ribs, and a rubber tube of larger diameter than the cannula, with a lateral eye, but tied at the end, was stretched on a ramrod and introduced through the cannula into the chest. The cannula was fixed to the chest by means of a flange tied with tapes round the chest. The tube was connected with a two-bottle drip-pump, producing a negative pressure of about 8 mm. of mercury. There was no change of dressing until the cannula was finally removed in about a week. In cases where rib resection was necessary airtight suction drainage could also be obtained by passing a rubber tube through a finger-stall with large rubber flange from which the top had been cut off, mastisol being used for sticking. Chronic cases could be treated by (1) Carrel-Dakin method, (2) decortication of the lung, (3) Estlander's operation. In conclusion he discussed the treatment of pulmonary abscess.

Sir JOHN MOORE agreed with the President regarding the frequency of empyema in cases of diplococcic pneumonia infections, especially in children. These cases, if taken in time, generally did extremely well. He always had found the greatest difficulty in differentiating between empyema and hypophrenic abscess.

Mr. R. A. STONEY said that during the late war he was stationed near a depôt where there was a bad epidemic of pneumonia among African soldiers. A great number of the cases had ended fatally, and most of those who did not, developed empyema. He then saw the condition which had been described by old writers as "empyema of necessity," because in a great many of the cases the empyema had been present for so long that it had burst itself, and was discharging through the chest wall. He had found hypochlorite solutions very useful in these cases. He also found that empyema could be cured without obliterating the cavity of the pleura. He washed these cases out daily, and the discharge was reduced pretty rapidly, but in one case the tube came out during dressing, and owing to difficulty in getting it back he had left it out. The patient's temperature did not rise, and there was no further discharge of pus from the cavity. He concluded that the cavity had become sufficiently sterilised to allow the curative power of the pleura and its secretions to destroy any infection left behind. He agreed that vigorous and early operation should be undertaken. He personally removed a piece of rib in every case, whether child or adult, generally a piece of the eighth or ninth rib in the back. He washed out the pleural cavity thoroughly and put in a double tube, making a tight closure of the wound round the tube. He gave the patient respiratory exercises as early as it was possible to do so.

Sir WILLIAM TAYLOR said that free needling of the chest was certainly a help in the diagnosis of cases of empyema. He had only once experienced any ill-effect after needling, and that was in a case when almost directly after the needle had been put in the patient brought up blood and nearly suffocated. Morphia was given and the patient recovered. He never hesitated to needle a case several times, and he put in the needle inches deep. He thought the bacteriological standpoint was an important one in connexion with the surgical treatment of empyema. If the case was tuberculous, it was best left alone. If the infection was found to be purely pneumococcal, he believed in opening the chest very widely and freely, removing every particle of fibrin round the chest, sponging it out with disinfectant, and then sewing it up. He generally aspirated the patient within 24 hours, and again within 48 hours if necessary, and allowed the patient up within five days.

Dr. V. M. SYNGE said that he thought that in cases of small localised empyema a sign of some importance was the presence of ægophony. In cases of encysted empyemata X rays were very helpful in localising the pus. Sometimes when no pus was discovered the needle was found to be blocked by a piece of skin. It was well to have ½ c.cm. or 1 c.cm. of sterilised water in the syringe before inserting the needle, as this cleared the lumen and avoided getting skin on the needle. Empyemata in children were, he thought, frequently primary, as the condition was often found in cases where there was no history of pneumonia. It was said that streptococcal empyema was more serious than pneumococcal empyema, but he personally thought there was not much difference, as cases of one got well as quickly as cases of the other.

Mr. W. PEARSON said that a surgeon should satisfy himself as to the details of diagnosis, and not merely be content with the diagnosis given to him by the physician. Encysted empyema should be felt for when less pus was found than was expected. There was not much to choose between the scapular line for drainage and the axillary region, but he preferred the latter as it caused less discomfort to the patient.

Mr. HENRY STOKES had not found X rays of the least help in diagnosis of these cases. He did not think it was necessary to resect ribs.

Dr. T. G. HARDMAN said that he found X rays one of the most important methods of diagnosis. At private houses, of course, it was only possible to take photographs, but screening was even more useful. It was not possible, of course, to differentiate by means of X rays between a serous effusion or a purulent one, and for this one had to rely upon the clinical diagnosis. There was, however, very little difficulty in diagnosing free fluid in the pleural cavity by X rays. As the fluid increased in quantity the fluid line became more and more opaque, and it could also be seen whether the fluid was free in the pleural cavity or not. The condition of abscess of the lung was extremely difficult to demonstrate by X rays, and a great deal depended on the position of the abscess. But in some cases it was possible to make a definite diagnosis of abscess, as even if the cavity itself was not shown, the area round it was. It was not, of course, possible to diagnose an abscess which was lying under an effusion, and the greatest difficulty was experienced in cases where there was fluid and consolidation, as one obscured the other.

Dr. C. J. MURPHY said that within a year he had had six cases of intrapulmonary sepsis, and he had found that elevation of the foot of the bed was extremely successful.

Mr. **DENIS KENNEDY** said he thought empyemata in children and in adults were quite different things. Aspiration relieved the patient during the acute phase, and after this had been done he thought that ordinary drainage for a short time should be sufficient.

Dr. **LEONARD ABRAHAMSON** said that he had recently treated two cases of intrathoracic suppuration. The first was a case of purulent pericarditis in a child who was admitted to hospital with an abscess on the hip, and when the abscess was opened the pus was found to be due to *Staphylococcus aureus*. The abscess had been noticed after the child had had a fall, but before the fall the child had had a gum-boil, and on examination it was found that there was an abscess over one of the teeth. The pus in this was also found to be due to *Staphylococcus aureus*. The pericarditis could not be treated by surgery, as the patient was too ill. The second case was an alcoholic man who developed pneumonia. An abscess formed on the lung, and pus was aspirated from it. The whole of the chest wall showed interstitial empyema. On incision the muscles of the chest wall were found to be full of pus. They went on suppurating for some time, and then the patient died from exhaustion. He thought that a needle should never be put into the lung unless one was prepared to operate afterwards. If an abscess was towards the upper part of the lung he thought it should be left alone, but if it was at the base of the lung, then surgery was indicated.

Dr. **H. T. BEWLEY** said that he also felt that aspiratory treatment of empyema was futile in most cases. He had recently seen two cases, both of them children, with pure pneumococcic empyema. At first, on aspiration, opalescent fluid was removed, but this re-accumulated, and on the second occasion pure pus was removed. Neither of these cases benefited by aspiration, but they were both operated on and were quite well within a fortnight.

Reviews and Notices of Books.

PEDIATRICS.

By Various Authors. Edited by ISAAC A. ABT, M.D., Professor of Diseases of Children, Northwestern University Medical School, Chicago. London and Philadelphia: W. B. Saunders Co. 1923–1924. Vol. I., pp. 1240; Vol. II., pp. 1023; Vol. III., pp. 1051. 8 Vols. £18 per set.

THIS encyclopædia of the diseases of children, prepared for the practitioner, the student, and teacher, is composed of a series of monographs by writers with special knowledge of their subject. An attempt has been made to cover not only the internal diseases of children, but also subjects of surgical interest, and this encyclopædia may come to displace the only other encyclopædia on children's diseases written in English—that by Keating prepared in 1889.

Vol. I. starts with a monograph on the history of medicine by Fielding H. Garrison, wherein the history of pædiatrics is traced to the present time. It will be of some interest to readers in this country to discover which are the names among British and foreign pædiatricians which the writer—an American—considers of sufficient note to deserve mention; certainly many names which one would have expected to find have been omitted. After a chapter on Congenital and Acquired Predispositions and Heredity by Clarence Little, and one summarising with great care and numerous illustrations the Anatomy of the Infant and Child by Richard E. Scammon, T. Brailsford Robertson deals with Growth and Development. He gives an admirable description of the general characteristics of the growth process, and points out that the growth of children and animals takes place in spurts, separated more or less distinctly from one another by periods of languid growth. In the first half of gestation growth is slow; the second half shows extraordinarily rapid accretion of tissue which continues up to the first year of extra-uterine life, when a slackening of growth occurs. At the third, fourth, and fifth years the pace of growth increases greatly, is followed by a pause, and then once more extreme rapidity of growth is shown during adolescence. Reference is made to vitamins and general environment as factors influencing growth. Chapter V. consists of a discussion by John R. Murlin, of Rochester, N.Y., on the Physiology of Metabolism in Infancy and Childhood. For this chapter alone this book is worth purchasing, so clear and complete are its contents.

Jesse McClendon deals with the Application of Physical Chemistry to the Physiology of Childhood. This short monograph covers the subject of the hydrogen-ion concentration of the alimentary tract, the blood, and other body fluids. The Hygiene of the Home is then discussed by Walter Reeve Ramsey, and the Hygiene of the School Age by Josephine E. Young, of Chicago. An excellent portion of this chapter touches on mental hygiene, when Dr. Young shows a clear insight into the problems of the school medical officers of this country as well as those of her own. A few pages are devoted to the teaching of sex hygiene and sex delinquency. The chapter concludes with notes on the hygiene of instruction of writing, reading, the hygiene of the kindergarten, manual training, play, clothing, school architecture, heating and ventilation, swimming-pools, and open-air schools. These latter are in many cases established on the roofs of the tall buildings in some of the crowded cities and great benefit is derived by the children. The Hygiene of Infants is dealt with by W. R. Ramsey, and Climatotherapy by F. L. Wakeham. A chapter by H. Winnett Orr on Hygiene of Crippled Children completes this volume.

Chapter XII., which opens Vol II., consists of a monograph on the Mortalities of Infancy by R. A. Bolt. History-taking and Physical Examination of Infants and Children is then discussed by Mark Jampolis, and Cerebro-spinal Fluid by Abraham Levinson. Roentgenology in Pediatrics is admirably dealt with by F. C. Rodda. More than 60 photographs illustrate the diagnosis of tuberculosis, foreign body, atresia, &c., by this means. No detailed mention, however, is made of the aid which may be gained from X rays in the diagnosis of congenital pyloric stenosis or duodenal stenosis, and the photographs are confined to the thorax. In Chapter XVI. John Diven discourses in somewhat aimless fashion on Peculiarities of Disease in Childhood. This chapter would seem to be redundant. On the other hand, another general survey on Prophylaxis and Treatment, by L. R. De Buys, is excellent. The author affirms that the diseases of the newly born belong to the pædiatrician, and that the obstetric interest in the mother may deprive the child of the special consideration which it should receive were it placed immediately under the care of a trained pædiatrician.

Therapeutics are discussed under the headings of Aerotherapy, Climato-therapy, Dietotherapy, and Psychotherapy. Under Therapeutic Technique, Gastric Lavage, Enemas, Lumbar Puncture, &c., are described and illustrated. Drugs are classified according to their action, and a list occupying 20 pages give doses suitable for children aged 6 months, 1 year, 18 months, 2 years, and 3 years. This chapter will be of the utmost service to the young pædiatrician. Heliotherapy is dealt with adequately by Henry Dietrich, and Diseases of the New Born by N. O. Pearce. Then follows a chapter on the Premature Infant by Julius H. Hess, which is one of the most complete monographs on the subject which we have had the good fortune to read, for the author has an intimate first-hand knowledge of his subject. Several pages are devoted to the physiology of the premature infant, followed by an account of the pathological lesions and defects common in these infants. A full description of the requirements of a hospital nursery unit should be especially valuable to those hospitals contemplating the addition of cots. Hess believes that the outlook for premature infants on anything but breast milk is extremely poor. Prognosis as to life and future mentality are fully discussed. The following three chapters deal with feeding problems. The Chemistry and Biology of Milk, Breast Feeding and Nutrition, and the Artificial Feeding of Infants, by J. Sedgwick and W. Cole, point out that "through creating the proper demand on the breast we can in all cases produce some breast milk for every child at least for a time"; and this statement will nowadays be generally accepted as correct. It is interesting to note that the authors do not consider that the mother's milk-supply is affected by emotional upsets, only indirectly in so far as her general nutrition is affected. J. Brennemann cites the well-known fact that if only a small amount of human milk is added to the food of an artificially fed baby, the baby will tend to thrive as though fed only upon the breast. Many pages are devoted to the physiological behaviour of the different food elements of cows' milk as compared with those of human milk and their modification and adaptation in the artificial feeding of infants. This author considers that starch may be given to an infant in small amounts from the second month, and that the benefit following its use is due to the prevention of large curd formation. The behaviour of protein is discussed at some length, and the author would not place at its door the many ills which some of the most modern pædiatricians would attribute to this element.

A chapter on Diabetes Mellitus contains a too meagre description of the use of insulin. Diabetes Insipidus, Sea-sickness, and Beri-beri are ably dealt with. In the chapter on Acidosis, by John Howland and W. McKim Marriott, of St. Louis, a difficult subject is dealt with in a most able manner. T. C. Hempelmann, who discusses Obesity, lays little stress on the subject of hypopituitarism or Fröhlich's syndrome, but is otherwise helpful. Chapters on Infantile Scurvy, Rickets, and Pellagra follow, and the volume is concluded by a discussion on Constitutional Diathesis of Childhood, and a note on Acrodynia.

In Vol. III. the study of gastro-intestinal physiology and pathology leads naturally to a full discussion of nutritional and digestive disturbances. Lesions of the mouth, tongue, nose, and pharynx, congenital and acquired, are excellently described—the chapter on orthodontia or facial orthopædics being noteworthy. Diseases of the glands associated with the intestinal tract receive attention, and eight chapters on the investigation of normal and abnormal conditions of the respiratory tract conclude a volume that comes well up to the standard of those previously issued.

Never before in any series of monographs on children's diseases in English has an attempt been made to cover the ground with such thoroughness and at the same time to preserve such clearness of outlook. Success has been achieved by careful choice of the writers, and by the fact that their individual viewpoints have been preserved. Those who require to refer constantly to literature on pædiatrics will do well to supply themselves with these volumes.

Diseases of the Rectum and Colon.

By P. Lockhart-Mummery, F.R.C.S. Eng., M.B., B.C. Cantab., Senior Surgeon to St. Mark's Hospital for Cancer, Fistula, and Other Diseases of the Rectum. London: Baillière, Tindall and Cox. 1923. Pp. 872. 25*s.*

As the author points out in his preface, this new publication takes the place of two former ones, one on diseases of the rectum and the other on diseases of the colon. The combination of the two books in one volume avoids much repetition, since it is impossible logically to separate diseases of an organ as a whole from those of its terminal part. The new volume, in which the whole subject has been revised, will, we think, become one of the standard English books upon the subject. It is full, well illustrated, and eminently readable, although there are indications that the earlier chapters have been less carefully prepared than the later ones. The great wealth of clinical material at St. Mark's Hospital has caused the author to regard it as unnecessary to quote the experience of other surgeons at other hospitals; references to other works are very scanty. This is a matter of less moment in so far as the practice at St. Mark's Hospital is now very generally followed, except, perhaps, in one particular, that exception being the operative treatment of cancer of the rectum. Mr. Lockhart-Mummery advances cogent reasons for preferring the perineal to the abdomino-perineal excision, the chief of these being the undeniably much higher mortality of the latter operation. The abdomino-perineal operation is admirably described and cases of his own are quoted by the author, but the reader is left somewhat in doubt as to what proportion of cases and which cases call for this very drastic procedure. One is given the impression that the abdomino-perineal operation is now very rarely performed at St. Mark's Hospital owing to the comparative success of the perineal operation in the author's hands. In this chapter the lack of a more extensive review of other surgeons' work is felt.

The book will be useful both to general practitioners and to medical students, and especially so to the general surgeon who is called upon to operate in circumstances where his special experience has not lain.

Diagnostische und Therapeutische Irrtümer und deren Verhütung.

Vol. II.: "Psychiatrie." By Geh. Med.-Rat. Prof. Dr. E. Meyer, Direktor der Psychiatrischen und Nervenklinik der Universität in Königsberg. Second edition. Leipzig: Georg Thieme. 1923. Pp. 119.

As may be gathered from the title of the series in which it appears, Dr. Meyer's publication is a manual of differential diagnosis in mental disease. The neurological aspect is particularly emphasised, very detailed considerations of physical signs being given. By far the longest chapter is devoted to the diagnosis of dementia præcox.

L'Année Psychologique.

23^{me} année. Paris: Librairie Félix Alcan. 1923. Pp. 644. Fr.40.

With this number is resumed the publication of a useful annual. It opens with five original monographs on experimental psychology by French writers, proceeding then to a critical analysis of the world literature for the year ending in October, 1922. Applying an obvious test, one finds that little of note in the Transactions of English societies or in specialist journals has escaped mention. A gap in scientific records is filled by a bibliography of German writings from 1914 to 1920.

Psycho-analysis is regarded as outside the sphere of psychology; except for a reference to Raymond de Saussure's book, no information is given as to psycho-analytical literature, and this limits the usefulness of the publication; otherwise it is a work of reference which will be of value to investigators and students of all nationalities.

Right Food the Right Remedy.

By Charles C. Froude, B.Sc. With an Introduction by Royal S. Copeland, A.M., M.D., formerly Commissioner of Public Health, New York. London: Methuen and Co. 1924. Pp. 301. 7*s.* 6*d.*

We are not at all favourably impressed by this book. It is a popular book, and as such, we cannot and do not expect it to be very profound. But even in a book for the multitude, we do expect the author to display some knowledge of the modern aspect of his subject, and we look for that feature in vain in the work that lies before us. One passage may be quoted as typical of its contents (p. 55): "Improper elimination also means that harmful deposits are often formed within the body. Many of the more hearty and staple foods—such as meat, eggs, bread, and the legumes—often decompose before they can be digested, due to their deficiency in food salts—the salts which are antiseptic or antifermentic. The raw fruits and raw vegetables are rich in antiseptic or antifermentic food salts, and if eaten with the staple or hearty foods, will lessen, or counteract, this decomposition. . . . . The question receives consideration under the name of 'vitamins' and other terms, but it is the same truth which Dr. J. H. Tilden, since he brought it out many years ago, has been teaching and practising." What are these "antiseptic or antifermentic food salts"? And even if such exist why does the author claim that they have any relation to the vitamins? We cannot even guess at the meaning.

DIE ZWILLINGSPATHOLOGIE.

Ihre Bedeutung, ihre Methodik, ihre bisherigen Ergebnisse. Von Dr. HERMANN WERNER SIEMENS, Privatdozent für Dermatologie an der Universität München. Berlin: Julius Springer. 1924. Pp. 103. $1.90.

As the author somewhat pathetically remarks in his first chapter, "mit dem Menschen kann man keine Vererbungs-experimente machen." This being the case, the assessment of the relative importance of hereditary and environmental factors is a matter of much greater difficulty in man than in animals and plants. In twins, at any rate of the uniovular variety, Nature has provided pairs of individuals who, so far as heredity is concerned, may be regarded as having started existence under identical circumstances; any differences between the members of such a pair may be looked upon as the effects of factors other than heredity. From the psychological and sociological standpoint, observations as to differences in mentality and character between twins are on this account of particular interest. In this book the author has endeavoured to extend the method to pathology and, in fact, to establish a whole system of "Zwillingspathologie." It is, of course, obvious that the subject is merely a part of the whole pathology of heredity, in the laying of the foundations of which Nettleship and other English observers long ago did such important work. The author gives due credit to the work of the pioneers, and has added many observations of his own, mostly, it must be admitted, of a rather negative nature. It is difficult, for instance, to comprehend the value of the observation that of two twins one died of chronic pancreatitis at the age of 35, and the other did not. However, that knowledge may grow, someone, presumably, has to note these things.

RELIGION AND THE NEW PSYCHOLOGY.

And Other Addresses. By N. BISHOP HARMAN, M.A., M.B., B.Ch. Cantab., F.R.C.S. Eng. London: The Lindsey Press. 1924. 2*s.* 6*d.*

IN this little book Mr. Bishop Harman has attempted to state from a medical standpoint some of the views of life current to-day in our society, and he uses a wide experience of affairs in a comparison of these views with religious experiences, and particularly with religious intuitions, which, by as much as they are hard to define, possess also a corresponding influence over men's minds. The book contains three essays or addresses and ends with a very brief but dignified religious confession. As Mr. Harman says in the opening paper, an address given before the National Conference of Unitarian and Free Christian Churches and afterwards published in *The Hibbert Journal*, it is necessary, if we are to understand the fundamentals of modern psychology, to have a working knowledge of biology. He arrives at the conclusion that the soul conception, if it cannot be proved, cannot be disproved, while pointing out that belief in that conception is fundamental in the peoples who have sought to guide their steps by the light of intelligence.

The book is short and simple, though dealing with the most difficult problem before us all; it should be really helpful.

TO VENICE AND BACK IN A TWO-SEATER.

By E. HALFORD ROSS. London: Cassell and Co., Ltd. 1924. Pp. 240. 6*s.*

WE should not have thought that the intention of the author and his wife to spend a holiday on the Continent with the assistance of a two-seater would have led a large circle of acquaintances to insist that the idea was ridiculous. Surely it has been done before, and surely it will be done again; and possibly the absence of all misadventure, which is remarked upon by Dr. Halford Ross, may encourage others to do likewise and to pass along similar routes. Certainly, the places visited in the itinerary undertaken by Dr. Ross and his wife are well worth seeing, and while people who travel on the Continent with any regularity will have visited many of them, most of them possess an attraction as vivid for old friends as for new visitors. The chronicle makes the kind of rambling diary which is agreeable reading for the personal friends of a traveller, when quite small beer acquires a flavour from private knowledge of how so and so will take such and such an event—the thing that is not worth recording publicly may have a particular application in the case of a particular chronicler. Occasionally this little book is funny in a primitive way, and occasionally the author is unnecessarily informative, for surely quite a lot of people know who Rousseau was and what is the use of circular letters of credit; the comparative size of mortals and mountains has been widely observed, and reflections of a similar character may be found in these artless pages.

Dr. Halford Ross supplies 19 little sketches, many of which are artistic in the way in which they secure their purpose without labour or detail.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE.—Old-time stories of quicksilver mines, where only slaves and convicts could be employed, add interest to a paper in the March issue by Dr. A. Hamilton on the Mercury Mines of California. The metal occurs chiefly as sulphide of mercury or cinnabar, but also as the selenide, the monochloride, the iodide, and the telluride. In some mines "the silver runs free" and is found in droplets, but as these rich mines are hot, over 90° F., the danger from poisoning is too great for them to be worked. In the stress of wartime an attempt was made with serious results to the miners. Cinnabar is reduced by roasting when the metal distills off and is collected in condensers, but it penetrates everything and the men can only escape mercurialism by exerting personal care. Even so cases of poisoning occur from time to time, several of which are described in detail.—The main article in this number is a report on Bakers' Itch by Dr. A. C. Parsons, who investigated this trouble in Great Britain. He finds that an important influence is personal cleanliness, and does not blame any specific influence. Ordinary scabies in many cases has been called bakers' itch. The incidence was found greatest in congested districts and on old-fashioned premises where dough is made by hand, while cases were rare in well-equipped establishments. Contact with sugar and dough in the absence of washing caused skin rashes. Prevention lies in the use of dough machines and in the provision and use of washing facilities. In a few rare cases an intolerance of flour proteins develops, which prevents continuance of employment. The article is well illustrated and contains valuable information.—A capable article upon the difficult subject of sickness insurance statistics, by Dr. L. Teleky, Düsseldorf, completes a truly international number.——In the April issue Miss M. Smith reports on a study in activity and fatigue conducted in the laundry trade. The paper is well illustrated and the data collected by devising tests applicable to the industry are clearly marshalled. Energy as measured by output was found to slow down at the end of the day. Official rest-pauses are reported as beneficial.

The general health of laundry workers was found to be fairly satisfactory.—The occurrence of blastomycosis as a complication of industrial injuries is exemplified by Dr. R. M. Carter from reference to three cases. This condition was first described in America and became known as the Chicago disease. No cases have yet been reported in Great Britain.—Dr. E. L. Kennaway contributes a long and important article on cancer-producing tar and tar-fractions. In it are detailed the results of intensive investigations for determining the noxious factor, but coal-tar presents so complicated a chemistry that the labour of trying out each constituent on mice has been immense. Industrial and experimental evidence agree in incriminating the higher boiling fractions distilling over from 250° to 500° C., but the exact cancer-producing substance has not yet been isolated. Something, however, has been achieved by narrowing down the scope for further research. The way in which field observations in industry and laboratory experiments on animals have been found to accord lends promise to further work on these lines.

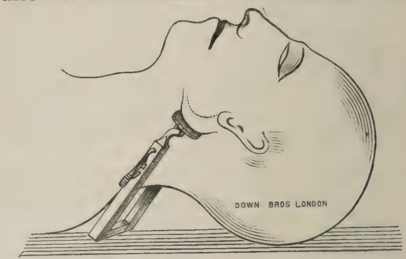
BRITISH JOURNAL OF ANÆSTHESIA.—With the present issue this journal completes its first volume. Dr. Dudley Buxton contributes to this number another of his very readable historical sketches. This deals with Snow and his work on chloroform, and we may heartily endorse the concluding paragraph: "To study Snow's work and follow it by studying the more recent experimental research would, the writer believes, prove most helpful to those who, not being experts, have relegated chloroform to the limbo of bogeydom and so lost the aid of a most valuable asset to their anæsthetic armamentarium."—Mr. S. R. Wilson discusses modern developments in anæsthesia and deals extensively with elaborate preliminary investigations to determine the patient's exact bodily condition and to forecast his behaviour during and after operation and anæsthesia. These investigations are of especial value in relation to myocardial deficiency.—The useful abstracts of current literature on anæsthesia are continued, and an index is supplied to the completed volume, on which its editor, Dr. H. M. Cohen, may be congratulated.

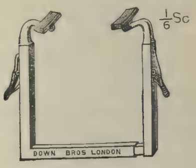
JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, March and April, 1924.—In the opening article of the issue for March Col. R. S. Hannay discusses a "manœuvre exercise," and Dr. H. M. Woodcock concludes his paper on the Rickettsia bodies.—Maj.-Gen. W. W. O. Beveridge publishes his presidential address to the Army, Navy, and Air Force Group of the Society of Medical Officers of Health, wherein he mentions many of the advances in military hygiene made since the war. The Director of Hygiene at the War Office is now responsible not only for the health of the accepted recruit, but for his medical selection and for his being watched during his training. It is hoped there will soon be a standard of mental capacity; at present some 60 per cent. of the recruits offering themselves are taken. During their five months at the depôts they are regularly weighed, and usually gain 10 lb., but lose weight if sick in hospital or when absent without leave. In future wars a sanitary section will be allotted to each division, and will be commanded by an R.A.M.C. officer, specially trained, but not necessarily a medical officer. The N.C.O.'s are termed sergeant or corporal sanitary inspectors, and the sections include tradesmen as bricklayers, carpenters, and sign-painters. The health of the army is improving, the death-rate is down to pre-war figures, venereal disease is down to 25 and scabies to 8 per 1000. Present-day temperance is responsible for much improvement in health and physique.——In the April issue Lieut.-Col. C. W. Holden gives an interesting account of the anti-malarial measures undertaken by the 22nd Division on the Macedonian front along Lake Doiran in the spring of 1918, specially stressing cresol as a better larvicide than oil.—Maj. W. H. B. Ritchie has a paper on the education of the corps, pleading for a general staff for the Army Medical Services to deal with war problems, operations, and training.—The Danish treatment of scabies, introduced by Dr. Svend Lomhelt, has been adopted as the standard treatment in the British Army, and has shortened time in hospital by a half or even more. The ointment, freshly made of sulphide of potassium and zinc in vaseline, lanoline, and paraffin, is smeared thoroughly over the skin, but is not rubbed in. There is no dermatitis, the parasites are at once killed, and the patients are cured in 24 hours. "No relapses have occurred" is the report from the Royal Herbert Hospital at Woolwich.—Col. S. F. Clark describes what he saw in a trip round Southern Arabia, including Socotra, which many have seen but few have visited.

New Inventions.

APPARATUS FOR SUPPORTING THE JAW DURING ANÆSTHESIA.

THIS instrument has been designed to facilitate the maintenance of an adequate airway in cases in which the manual support of the jaw by the anæsthetist is inconvenient or demands an abnormal amount of attention. In such cases the mechanical support of the jaw frees the anæsthetist's hands from performing a purely mechanical function, and allows him to concentrate more closely on the condition of the patient. This instrument will be found useful in operations on the eye, when complete immobility of the head is essential.





The support consists of two upright metal bars, the length of which can be varied at will, bent inwards at their upper extremities to form sockets in which the angles of the jaw rest. The sockets are covered with soft rubber pads to prevent pressure injury to the skin, and are capable of slight movements on a lateral and a vertical axis so that they can be more accurately adjusted to the contour of the bone. The lower extremities of the uprights are connected together by a transverse bar which can be adjusted to any length according to the width of the patient's neck. When the instrument is in use this bar rests upon the table just behind the patient's shoulders, which prevent it from slipping forward. The pressure on the angle of the jaw is then exerted in the proper direction—e.g., backwards and upwards—and by the correct adjustment of the length of the upright bars the force can be so regulated that it is just sufficient to keep the jaw in position, and no more. The instrument can be adjusted to the patient in a few seconds and when once applied does not need further attention. The appliance is, of course, limited to operations in which the patient is in the dorsal position.

Messrs. Down Bros., Ltd., London, are the makers.

E. H. P. CAVE, M.R.C.S. Eng.
King's College Hospital, London.

THE LANCET.

LONDON: SATURDAY, MAY 31, 1924.

THE LISTER INSTITUTE.

The need of a combined histological and serological effort in order to elucidate the mechanism of natural defence to infection was stressed by Prof. J. C. G. Ledingham in his presidential address[1] to the Pathological Section of the Royal Society of Medicine in 1922, and in the annual report for 1924 of the Lister Institute of Preventive Medicine the results of some of his investigations on these lines are indicated. With a view to determining the validity of alleged specific affinities or tropisms of certain viruses for particular tissues, he has recently been studying the tissue changes at the site of inoculation in vaccinia, the virus having been introduced intracutaneously. It is not stated what animal was used. It has been ascertained that it is the reticulo-endothelium system which is primarily involved, the epidermis escaping unless the horny layer is sufficiently permeable to allow the passage of the exudate to the surface to form a scab or vesicle, in which case the epidermis is only secondarily implicated. The surgical removal of skin lesions at daily intervals has enabled the progressive changes to be studied from the day of infection onwards. In the same department Dr. J. A. Arkwright, working with Dr. S. S. Zilva, is studying the influence of diet deficiencies on the inflammatory response of skin and subcutaneous tissues to bacterial and toxic stimuli. This work also should have an important bearing on the solution of problems of natural immunity. Among the many other researches under weigh in this (the bacteriological) department are those of Dr. E. E. Atkin on the relation between differences in serological grouping as exhibited by strains of meningococci and gonococci with cultural peculiarities, and an attempt to elucidate the histogenetic relationships of the mammalian blood platelet by Dr. S. P. Bedson and Miss M. E. Johnston. With Dr. Zilva, Dr. Bedson has carried out further experiments on the question of platelet reduction in vitamin-A deficiency, but has failed to confirm the alleged grave implication of these elements. Dr. E. H. Lepper and Dr. M. L. Cowan have outlined work undertaken by them at this Institute at a recent meeting of a society reported on p. 1105 of this issue of The Lancet.

In the department of biochemistry, directed by Prof. A. Harden, patient work on the accessory food substances had laid bare certain intriguing and crucial facts, though the isolation of these substances has not yet been achieved. For example, using rats as the experimental animals, it has been found that while wort usually contains the antineuritic vitamin, it is absent from the finished beer. Significant progress has been made by Dr. Zilva in the fractionisation of the antiscorbutic factor in lemon-juice. It is now possible to reduce the total solids of lemon-juice from about 9 per cent. to about 0·04 per cent., without appreciably diminishing the antiscorbutic activity. A method has been devised which renders it possible to store concentrated antiscorbutic preparations without any loss in potency, and successful clinical results have been obtained by the use of such stored preparations. Evidence appears to be accumulating that Prof. E. V. McCollum's conclusion that the growth-promoting and the antirachitic factors are not identical. Inactivation of these two principles by heat and oxygen proceeds at different rates and their quantitative distribution in spinach is also different. Moreover, Dr. R. Wagner and Dr. H. Wimberger, whose clinical studies on rickets in Vienna will shortly appear in our columns, have demonstrated that cod-liver oil, oxidised to the point at which 95 per cent. of the vitamin A is destroyed, possessed therapeutic value against rickets not obviously inferior to that of the untreated oil, thus providing additional evidence for the existence of two separate principles, (1) growth promoting, (2) rickets preventing, in cod-liver oil. The difference in the antirachitic value of milk, as the food conditions of the cow yielding it is changed from pasture to winter fodder and vice versa, were found by Dr. Ethel Luce to be considerable, and Miss M. A. Boas, working with young, growing rats has done complementary observations on the growth-promoting factor which show that cows' milk varies according to the diet of the animal in respect of this factor also. Prof. V. Korenchevsky, with the assistance of Miss M. Carr, has investigated the influence of qualitative deficiencies in the diet given to parent rats upon the number, weight, and composition of the young, concluding that the father's diet before conception has no effect, but that the diet of the mother before conception and during pregnancy influences the number and weight of the litters, but not the percentage of H_2O, Ca, P, and N in the young at birth. The mother evidently sacrifices her own tissues to produce offspring of approximately normal composition. Prof. C. J. Martin, the Director of the Institute, was engaged in the earlier part of the year in experiments to determine the limiting conditions as regards temperature, moisture, and air movement for a man to work at the rate of one-tenth horse-power, which is the performance of a good miner or navvy. The results of his observations were incorporated in a presidential address to the Hygienic Section of the Pan-Pacific Conference held in Sydney, where the feasibility of white labour in the tropics and the hygienic problem of hot mines were discussed. The problem of consistently producing a good diphtheria toxin has continued to occupy the attention of the department for the study and preparation of antitoxic serum; also the search for a more satisfactory method for the standardisation of anti-dysentery serum and for the best way of estimating the therapeutic value of antimeningococcus sera. A new laboratory at Acton, Marazion, Cornwall, has been constructed and equipped, where the preparation and study of antivariolous vaccine will in future be undertaken.

There are still those, however, who doubt the immediate practical value of researches carried on at an institute detached from hospital beds, and protest that work conducted in such institutes tends to become academic. To show how invalid is this argument, we may select from various parts of this report a few notes showing clearly that the Director and his colleagues are alert and eager to test experimentally any new or revived method that might be of value in therapeutics. Several remedies appear to have been tried out on sick animals, or experiments have been devised to test the validity of the theory on which their administration is based. Dr. A. L. Schütze has in the past nine months tested the reputed therapeutic value of Dreyer's diaplyte vaccine on tuberculous guinea-pigs. No evidence has been obtained that the course of the disease in these animals is favourably modified by this treatment. Again, the sodium salts of various fatty acids in soap form have been claimed to exert favourable and healing action on diseases due to acid-fast organisms (tuberculosis and leprosy). The selective action of fatty acids on acid-fast bacilli is striking, but as a result of investigations on the potency of a series of these acids from a variety of sources in inhibiting the growth of tuberculosis in artificial culture it does not appear that any particular soaps are more efficient than others in this respect, equally good inhibiting results being obtained with derivatives of cotton-seed oil as with chaulmoogra oil. Miss JOHNSTON has been engaged on a problem which intimately concerns the practice of serum therapy and serum prophylaxis—that is, the influence of the previous injection of serum, whether normal or immune, on the effective action of a subsequent injection. Her results show that the loss of effective action from a subsequent dose which may occur when a previous dose of normal serum has been given can be explained solely by the development of antibodies to the original serum proteins injected. The immunity is not of the nature of an anti-antibody reaction. Dr. A. HUNTER BROWN is devoting himself to the study of the efficiency of immunisation methods by the cutaneous route, for which claims have recently been made by BESREDKA; and lastly, it has been found that the value of antimeningococcus serum appears to depend not only on type, but also largely on the strain used for immunisation of the horses; and it has been decided in future to use as many unrelated strains as possible for the production of therapeutic sera.

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[1] The Lancet, 1922, ii., 898.

We have only touched here upon a few of the scientific activities of the Institute. It should be added that the Medical Research Council has availed itself freely of these activities, providing seven whole-time workers and subsidising others, besides furnishing the salaries of the staff of the National Collection of Type Cultures which is housed in the Institute. Others whose business or pleasure it is to subsidise medical research on behalf of the community should not fail to note the excellent work being carried on at the Lister Institute of Preventive Medicine.

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FUTURE OF THE INDIAN MEDICAL SERVICE.

THE Royal Commission appointed last year, with Viscount LEE as chairman, to inquire into the higher ranks of civil service in India has just issued its report.[1] The Commissioners were asked to inquire into the general conditions of the various services, into the possibility of transference of any of their present functions from the central to provincial government, and into the whole question of ensuring and maintaining the recruitment of Europeans and Indians for those services. They were instructed to assume the necessity for maintaining a standard of administration in conformity with the responsibility of the Crown and the acceptance of the declared policy of Parliament increasingly to associate Indians in every branch of the administration.

As far as the Indian Medical Service is concerned, the recommendations of the Commission can be summarised almost in a sentence. Contrary to the recommendation of the Verney-Lovett Committee, the Commission recognises that the medical needs of both the British and Indian armies in India should be provided for in future by the Royal Army Medical Corps (India) which should absorb the Indian Medical Service, no attempt being made to perpetuate that service as at present constituted. This recommendation is in accordance with the scheme elaborated by the late Sir CHARLES BURTCHAELL in 1919, and printed at length as an appendix to the present report. At the same time, a new civil medical service is to be constituted in each province recruited by competitive examinations held both in England and India. To meet the medical needs of British officers in the civil service and their families a minimum number of British officers is to be maintained in this civil medical service, the limit to be prescribed for each province by the Secretary of State, on whom in the last resort is to rest the responsibility for their maintenance. Of this British element, one half, or the number required for the military reserve (whichever is the larger), is to be reserved for British officers seconded from the R.A.M.C., the remainder being those succeeding in competitive examination. It is further recommended that, subject to the existing rights of present members of the Indian Medical Service, all scientific chairs in Government colleges and hospitals shall be thrown open to all candidates, the clinical chairs alone being reserved for members of the civil medical services so far as suitable candidates are available.

The report recognises the great part which the Indian Medical Service in the past has played in the civil life of the country, as the chief agent in spreading Western ideas of medicine, surgery, and sanitation, and as a centre of original research; but the difficulty in securing British recruits of late years has been very great. At the present moment there is, in fact, a shortage on the civil side of no less than 57 officers in the authorised cadre of 420. The Commission gives reasons for its belief that the Burtchaell scheme may be so adapted as to meet the requirements of each province for a separate civil medical service, as well as to provide the necessary nucleus of British medical officers, which is regarded as vital to the needs and contentment of the British civil service in India. The Commission calls for the establishment without delay of the statutory Public Service Commission, whose task it will be to undertake the recruitment of personnel, as well as to establish and maintain proper standards of qualification for admission. Indianisation of the medical service of India, it is recognised, must be a long and steady process. But the position has altered to such an extent from the time of the Islington Commission that the question is no longer how many Indians should be admitted into the service, but what is the minimum number of Englishmen which must still be recruited.

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THE WHITE MAN IN THE TROPICS.

THAT a tropical climate has a depressing or an injurious effect on the white colonist is generally acknowledged. Prof. C. EIJKMAN, in a recent lecture[1] delivered in London, put the position aptly: "The state of weariness and listlessness coupled with psychical irritability, to which the European gradually becomes subject in the tropics, has always reminded me of the syndrome to which has been given the name of neurasthenia or nervous exhaustion." A similar conclusion—i.e., that the chief stress of a tropical climate falls on the nervous system—was reached by Dr. ANDREW BALFOUR in a series of lectures delivered last

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[1] East India (Civil Services in India): Report of the Royal Commission on the Superior Civil Services in India. London: H.M. Stationery Office. Cmd. 2128. 5s.

[1] THE LANCET, May 3rd, 1924, p. 887.

June at St. Bartholomew's Hospital. We have, therefore, to deal with this effect even if there is no disease due to parasite or bacterium. It is difficult, however, to elucidate how or why such nervous symptoms arise. Anæmia is not responsible, since Prof. EIJKMAN states there is no purely physiological anæmia of hot countries. He also failed to detect any difference between tropical and temperate climates as regards chemical heat regulation of the body—that is, in metabolism and heat production. The food requirement is, with about similar labour conditions, as great in hot as in temperate climates. Prof. EIJKMAN'S own basal metabolism, examined in winter in Holland at room temperature of 9° C., appeared to be the same as it had been two years before in a temperature of 27·5° C. in Batavia. Other observers, however, have obtained higher figures for temperate climates than for tropical climates. Of interest in this connexion are the researches carried out by Dr. LEONARD HILL and his co-workers on the effects of exposure of the body to variations in rate of external cooling as measured by the kata-thermometer. Their results showed that such variations in temperature as Prof. EIJKMAN employed—i.e., 9° C. and 27·5° C.—were not sufficient to affect metabolism of a clothed man in still air; and that the exposure of the clothed body to two or three times this rate of cooling caused a definite rise of metabolism. They also found that exposure of the naked body to the open air during summer in England increased bodily metabolism by 20 per cent. or more.

Dr. LEONARD HILL has pointed out that many people in temperate climates were really living in a tropical climate through overclothing their bodies and shutting themselves up indoors. One would hardly expect the metabolism of such individuals to be higher in the temperate than in the tropical zone. Dr. HILL, indeed, advocates greater exposure of the body to open air for the very purpose of counteracting national deterioration. Prof. EIJKMAN considered that observations carried out whilst doing heavy muscular work might throw more light on the subject; he obtained some evidence from a few experiments that during heavy work efficiency is lowered under warm conditions. He has also obtained definite evidence of differences in behaviour of the sweating mechanisms of white and coloured man, in other words, in the physical—as opposed to the chemical—regulation of body heat. He found that although Europeans and Malayans had about the same number of sweat glands per unit of skin surface, the Europeans lost more water, and therefore more heat, by insensible perspiration than the Malayans; on the other hand, the Malayans lost more heat by conduction and convection; these differences were independent of the quantity of water taken. The chief differences between the two races consisted, therefore, in the function of the skin; the coloured man was by his pigmentation better protected against the chemically active rays of the sun and he was not so subjected to excessive sweating. Water regulation may therefore play a leading part, but one must guard against theorising in this direction at the present stage. Some other recent researches on this subject are to the point. J. S. HALDANE and K. N. MOSS found that great sweating depleted the body of sodium and potassium salts. H. G. BARBOUR'S researches in America on the mobilisation of water indicate that blood dilution occurred in response to external heat and thus aided sweating processes, whereas exposure to cold led to a concentration of the circulating medium, the anhydræmia promoting sparing of heat. Prof. EIJKMAN suggested that acclimatisation might be more rapid for the white man if he followed the native in his frugality both in respect to food and drink, in his calm resigned view of life, and in his rule of *festina lente*. However, in such a case the white man would lose some of his characteristics, since, to him, as Prof. EIJKMAN said, "Health is not a mere negation of illness, it also implies something positive. The full use and control of the mental and physical functions, a vigorous constitution, and a considerable amount of bodily well-being—those characterise the healthy man. Much of this the sojourner in the tropics lacks, though he may be exempt from illness. This especially applies to the white man, and the consolation that he is a 'permanent summerman' cannot make up for this deficiency." Such are the difficulties the future will have to overcome if the tropics are to be colonised by the white man as we now know him.

According to Prof. EIJKMAN, who was the first director of the laboratories at Weltevreden in Java, the researches on this subject carried out during the past 30 years in the Dutch East Indies tend to disprove all theories so far enunciated to explain the depressing effect of a tropical climate on the nervous system of the white man. If we ourselves may be permitted to theorise, we would suggest that the monotony of atmospheric conditions in the tropics may stress the nervous system. In those places where there is little difference between atmospheric conditions for day and night and for seasons, the nervous system is continually at work supervising loss of body heat, whereas in climates with seasonal changes and day and night changes, during the cold periods the nervous system has the opposite function—sparing of heat—to control. Change of function may involve rest for one or other part of the nervous mechanisms. Telegraphists' cramp, for instance, is not a true cramp, but an hysterical spasm, and is rectified by change of work. Similarly, the frequent change of atmospheric conditions might prevent the nervous defects due to tropical monotony.

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MEDICAL PROTECTION.

NO practitioner is safe against becoming involved in very costly litigation arising out of his practice, and no amount of care and skill can render him immune against attack by unscrupulous or wrong-headed persons. Yet at a trivial cost protection can be obtained, and it is to be regretted that there are several thousands of practitioners who have not yet availed themselves of this line of defence. The London and Counties Medical Protection Society, one of the principal defence organisations, held its annual meeting of members recently, when the Council submitted a report of a successful year's work, including a steady increase in membership and financial resources. During the year 1923 the number of applications from members asking for advice and assistance was 662 as compared with 645 for 1922 and 465 for 1921. The results of cases in which litigation occurred were satisfactory, but in the great majority of cases settlement was obtained without litigation. The Council recorded with deep regret the deaths of two of the trustees of the Society's reserve fund—Sir James Reid and Sir John Tweedy to whom the Society was greatly indebted. Sir Anthony Bowlby and Sir Harry Baldwin have undertaken to act in their places. The marked increase over all previous years of cases which passed through the solicitors' hands during the past year indicates that the value of the Society is being more widely appreciated. Three hundred cases have been dealt with in this way, and of these a considerable number were satisfactorily disposed of by the general secretary without further legal proceedings. The year is particularly noticeable for the very small number of litigious cases which have actually gone to trial.

The experiences of the Medical Defence Union and the Medical Protection Society alike show that the questions and appeals arising from the National Health Insurance Regulations are markedly on the increase, and the solicitors to the Society warn panel practitioners thus: "The authorities, it would seem, are demanding from panel practitioners almost academic adherence to their terms of service and medical benefit regulations, and panel practitioners cannot be too careful in their strict adherence to them, as otherwise they may find that through a purely technical breach they are penalised in a substantial amount." We record elsewhere the results of three official inquiries held into the conduct of panel practitioners where the lapses cannot be categorised in this way. Such cases are very rare, so that they form a foundation for a distrust of panel practice which is quite unjustified. It should be pointed out that, in two of the cases at any rate, the charges were supported by animus, and in certain materials could hardly have been sustained before a jury—a reflection which detracts in no way from the fairness or acumen of the official tribunal in the discharge of very difficult and responsible work. The London and Counties Medical Protection Society urges, in the event of any trouble of this sort, that their members should inform the Society immediately, as the Society has in many cases been embarrassed in its efforts on a member's behalf by the matter coming to its notice when the position had already been complicated by unwise action on the part of the member. A large number of charges of negligence and unskilfulness are dealt with by the Society for its members every year. Many of them are mere excuses for not paying for medical services, or pretexts for attempts to extort money. Some are due to misunderstanding or mistaken ideas, and often have no solid foundation. The following illustrative case, among many, is quoted in the report:—

> A member received a solicitor's letter accusing him, or the doctor who assisted him, of having dropped chloroform into the eye of a patient during her confinement. It was stated that the patient's eye had been damaged and blindness caused. After inquiry, the solicitor was informed that there was no reason to suppose that any chloroform had been dropped into the patient's eye and that the eye affection—interstitial keratitis—from which the patient suffered could not have been caused in the way suggested. Nothing more was heard of the complaint.

The treatment of fractured bones gives rise to many claims for damages every year, and members are strongly advised to insist as early as possible upon an X ray examination in all cases of injury where a fracture or dislocation has been, or may have been, sustained. When this is refused, or omitted, for any reason, a member should provide himself with clear evidence—preferably in writing—to prove that he was not responsible for the neglect or omission. The report states that complaints continue to be received concerning the niggardly provision contained in the Coroners Act whereby a medical officer of a voluntary hospital is deprived of the statutory fee for making a post-mortem examination and giving evidence at an inquest on the death of a patient dying in such institution. The Society urges the medical profession to lose no opportunity of protesting against the continuance of this injustice.

The report contains much useful and helpful information and advice on the subjects of libel and slander, medical ethics, National Health Insurance, professional secrecy, medical fees, as well as on difficulties which may arise between partners or between principals and assistants. The numerous cases quoted go to show how many and varied are the trials of the practitioner, and how essential it is that he should adequately safeguard himself.

SMOKE CONTROL IN LANCASHIRE.—At a conference held in Manchester on May 19th, convened by the Ministry of Health and presided over by Mr. J. C. Dawes of that department, the chairman stated to the representatives of 85 authorities in Lancashire and Cheshire that the standards governing the emission of black smoke and methods of observation in this area varied very considerably, and that scarcely two districts had fixed the same permissible period. Even the methods of observation were far from uniform. He suggested that without in any way interfering with local autonomy more uniform methods of administration might usefully be adopted. After an address by Dr. Veitch Clark, medical officer of health, and a prolonged discussion, it was decided to appoint a joint committee to investigate the problem as it affects the area. Each county and municipality was to have two representatives and its medical officer of health or some other officer on the committee, and each rural urban authority one representative and the medical officer of health or other representative on it. Dr. Veitch Clark was appointed convener of the joint committee.

Annotations.

"Ne quid nimis."

QUININE AND MALARIA IN EUROPE.

THE supply of quinine is at present an international health problem, for on it depends the extent to which the epidemics of malaria in the Middle East can be controlled. And it is not a very simple problem. The total annual output of quinine has been put at 600 tons and this has been spoken of as a "world shortage." The present price of sulphate of quinine in England is 2*s.* 3*d.* per ounce wholesale as compared with 1*s.* 4*d.* in 1914, and it would appear that at this price the growers can produce more cinchona bark than the market requires. The enhanced price is determined largely by the increased cost of labour and manufacture, and it becomes relatively higher still owing to the very low buying power of the most malarial countries. Inquiry seems to be called for not only as to the possibility of growing more cinchona, but still more to determine the actual controlling factors in the price of quinine to-day and the possibility of using the drug in some cruder and cheaper form. Now, whilst price plays a dominating part, the practical control of malaria depends on a still more complicated factor—that of the distribution and administration of quinine. In the countries of the Middle East, such as Russia, where 75 per cent. of the population (in some districts 90 per cent.) are suffering from malaria, the only practical means of controlling the epidemic at the present time appears to be by the widespread distribution of quinine carefully controlled. It is possible that as these countries become reorganised the extreme isolation of the majority of the villages (which are often 20–30 miles apart) will enable village committees to deal with their districts locally by drainage and other direct methods of attack on the mosquito vector, but the ignorance of the population and their whole mode of life will, it is to be feared, prevent any such practical steps in this generation. Evacuation of highly malarial districts is impossible owing to the fact that these countries depend on the forests, the haunt of malaria, for wood for houses, heating, and transport. Hence the only line of attack that remains open is quinine administration —first, to reduce the number of human reservoirs, and secondly, to enable the peasants to work on the land. For it cannot be doubted that one of the most potent factors in the spread of malaria in Greece, Turkey, and Russia has been the malnutrition of the population. Malaria and malnutrition, due to absence of crops, constitute a vicious circle, which can only be broken by quinine.

The working out of a system of administration is, however, very difficult. The complete absence of hospitals or even doctors over enormous areas, the lack of communication and transport, the extreme ignorance of the population often with lingual misunderstandings thrown in, the size of the areas concerned, the poverty of the Government, and the liability to corruption constitute an almost insuperable barrier to effective anti-malarial work. Not quite insuperable, in view of the successful experiments now being carried out by the Friends' Relief Unit in the Volga valley, and reported by Dr. Melville Mackenzie a few months ago in our own columns.[1] In this highly malarial district the social conditions are broadly similar to those obtaining in Persia, Greece, or Albania. Some two years ago a complete laboratory was sent out from England with a skilled worker who, in addition to the routine work of blood examinations, has trained large numbers of local personnel in the laboratory diagnosis of malaria and in the administration of a malaria clinic. Boys who have finished their high-school training and who would in ordinary course be going up to a university, receive a three months' course of instruction in this laboratory before being sent out into the villages where each opens a malaria clinic. An outfit of stains, microscope, and quinine is supplied to each such centre, with the result that a very effective network of laboratories and clinics is being established throughout the country. Only microscopically positive cases are treated, and a standard individual course of treatment is laid down. Quinine is given over a period of two months, beginning in the first week with 20 g. daily, and among 200,000 cases so treated of which records have been kept there have been no ill-effects. Very few fail to complete their treatment, and the cases of recurrence or, strangely enough, of reinfection in the cases treated are scanty. One doctor only is employed in the organisation, the whole of the remainder of the work being done by an English laboratory worker with Russian assistants trained in the central laboratory.

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[1] THE LANCET, 1923, ii., 1225.

The success of this piece of work suggests that it will be found wiser to develop a completely separate anti-malaria organisation rather than to try and work through the grossly overcrowded hospitals and overtaxed medical personnel in the few places where these exist.

CHLORINATION OF THE WATER OF SWIMMING BATHS.

ON several occasions recently references have been made in our columns to the danger of the spread of diseases by the water of swimming baths, particularly with respect to infection of the ears and nose. Mr. Walter Edmunds suggested last week, not for the first time, the partial and rather drastic remedy of preventing water from entering the ears during bathing. At a conference of engineers and surveyors in connexion with the congress of the Royal Sanitary Institute at Hull last year, a paper was read on the continuous filtration of the water of swimming baths by Mr. T. Thomas, deputy city engineer of Hull. As the result of the discussion following the reading of the paper a committee of the Sanitary Institute was appointed to investigate the question, and the report of this committee was published in the April issue of the journal of the Institute. The appearance of this report is opportune at the beginning of a new swimming season. The committee received information from 23 towns and also from the manufacturers of plants for the mechanical filtration and aeration of bath water. The conclusions of the committee are broadly as follows: The processes of mechanical aeration and filtration give good results. Without such continuous process the water of swimming baths becomes foul in a day, and excessively foul if retained in the bath for several days. The committee are not satisfied that a mechanically aerated or filtered water is always bacterially safe and suggest that adequate chlorination is desirable in addition. The committee are satisfied that from a financial point of view mechanical filtration and aeration is a sound proposition as compared with the cost of refilling the baths daily or several times a week with clean water. The committee further suggest that where a process of mechanical filtration is adopted the water should nevertheless be changed once every four or six weeks during the summer and at least once in the winter season. Further, the committee think that a strict rule should be adopted that no person be allowed to enter the bath without some preliminary cleansing of the body, and that the shower or other bath needed for the purpose should be in all cases provided. It seems desirable that wide publicity should be given to the report. The management of swimming baths does not always come directly under the purview of the health committee or medical officer of health of the local authority. The Ministry of Health, however, holds inquiries when applications are made for the sanction of loans for expenditure on these filtration plants. There should, therefore, be little difficulty in securing that such plants are efficient. Medical men are impressed with the dangers to health from the impurity of water in swimming baths. We cannot afford to allow the cultivation of an invaluable exercise such as swimming to be interfered with by the impurity of the water. Many education committees, perhaps especially in inland towns, have made praiseworthy efforts to encourage swimming among the school-children. The organisers of physical education appointed during recent years attach great importance to swimming. During the war we learnt a great deal about the purification of water by chlorination. Now it is no exaggeration to say that it is quite possible at a reasonable cost by means of chlorination and filtration to provide a continuously pure water for all the swimming baths in the country. We trust that this matter will be taken up energetically by both the Ministry of Health and the Board of Education.

THE CONDUCT OF INEBRIATE HOMES.

AT a recent meeting of the Medical Council of the Federation of Medical and Allied Services, with representatives of the Church of England Temperance Society, there was a discussion on the Institutional Treatment of Inebriates, when the following resolutions were adopted :—

1. That in the opinion of this Council suitable homes for the treatment of inebriety serve a useful purpose beyond the relief they afford the patients' relatives.
2. Inebriates should only be admitted to institutions for treatment if considered by medical experts suitable cases for such treatment.
3. Boards or committees of management of inebriate institutions should include one or more medical practitioners with expert knowledge of inebriety.
4. Treatment in such institutions should be under the direct supervision and control of medical practitioners experienced in the scientific management of inebriety.
5. Clinical research and psychic treatment are essential to the success of any method adopted in dealing with the conditions.
6. Institutions for the treatment of inebriety should be of sufficient size to justify the employment of experienced resident medical officers.

Though it is not universally held that psychic treatment is essential in all cases of inebriety, and while some inebriates derive more benefit from residence in a small home or altogether away from others suffering from the same complaint, these resolutions as a whole will undoubtedly commend themselves, not only to those who have experience in the treatment of such cases, but to the patients' medical advisers, relatives, and friends. The admission into homes of only suitable cases will eliminate many undesirables, such as mental defectives and the vicious drunkard, who has no intention to abstain from alcohol. The presence in a home of the latter class prejudices the chance of recovery of others who take a serious view of their failing and are earnest in their desire for cure. It is to be hoped that the Church of England Temperance Society will be again able to establish a home for the poorer class of male inebriates for whose treatment there is at present practically no provision, and to receive them either under the Inebriates Act, or without signature before a magistrate, for shorter periods than was at one time considered essential. The Federation of Medical and Allied Services have agreed to provide expert medical opinion to assist the future management of the Society's Inebriate Homes, and this assistance will be of great value, not only in directing treatment, but in helping to determine the length of detention advisable.

EXCITING CAUSES OF EPILEPTIC SEIZURES.

APART altogether from the essential underlying cause of epilepsy, many factors are known to influence the occurrence of attacks in those who suffer from the disease. Little new has been discovered in regard to these factors or their mode of action, but P. Hartenberg[1] has recently cleared the ground with a useful comprehensive review of what is known. The conditions which favour the occurrence of attacks he divides into two groups: (1) physiological

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[1] Hartenberg: La Presse Médicale, April 30th, 1924, p. 379.

—influences to which the healthy individual is subject—and (2) pathological. Of the physiological factors the most important is sleep, and, in particular, the periods near the beginning and end of the night's rest. But for some patients it is the half hour which follows the awakening that is the most dangerous time; in these cases the attacks occur even after a short sleep during the day, and are independent of the patient's posture during and after the period of sleep. Influences related to the organs of sex come next in the physiological group; of these the catamenia are the most powerful; puberty, too, has an important effect, and sometimes attacks may begin or may recur at the menopause; pregnancy may initiate the attacks, but more often it brings about a remission of them; coitus and masturbation have been considered provocative of fits by some writers. The intake and digestion of food favour attacks in certain patients. Hartenberg is inclined to see in distension of the stomach the essential element in this sub-group; he has not been able to find any evidence that particular proteins are to blame. Changes in the blood-supply of the brain form the fourth class of exciting causes; they may be brought about by stooping, passing into a warm atmosphere, emotion (especially anger), or mental concentration. The pathological exciting causes are practically all concerned with the functions of the alimentary tract—dyspepsia, dilatation of the stomach, enteritis, constipation—the common factor probably being intestinal putrefaction; certain foodstuffs owe their harmfulness to the putrefaction to which they give rise. Hartenberg considers that periods of slight diarrhœa are a very significant sign in epileptics. Endocrine disorders are mentioned as a second pathological sub-group, the evidence that they favour attacks resting on the beneficial effect of certain glandular extracts in a few cases. Treatment of such favouring factors, though it will not cure epilepsy, is of very great influence in ameliorating it.

UROTROPINE IN THE PREVENTION OF POST-OPERATIVE RETENTION OF URINE.

IN 1921 Vogt, of the Gynæcological Hospital in Tübingen, published in *Zentralblatt für Gynäkologie* an account of his observations on the action of urotropine given by intravenous injection. His original object was to obtain some relief from the discomforts of lumbar anæsthesia. He noticed incidentally that patients thus treated with urotropine experienced no difficulty in micturition after operations. Accordingly he gave from 7 to 10 c.cm. of a 40 per cent. solution of urotropine to all his patients suffering from retention of urine after gynæcological operations, and he found that this procedure was uniformly successful, urine being passed by the patients 8 to 12 hours later without the discomforts and dangers of the catheter. In the summer of 1923 Dr. Sten von Stapelmohr, speaking at a meeting of the Association of Scandinavian Surgeons, confirmed these observations. At his hospital in Stockholm he had given urotropine by intravenous injection in about 50 cases, and the many successes achieved were not marred by complications such as hæmaturia. He had also given urotropine by the mouth in large doses, but the results had not been so good, and the action of the urotropine on the evacuation of the bladder had not been so uniform. Another report comes from the University Gynæcological Hospital in Leipzig. The author of this report, Dr. C. Pasch,[1] writes with an experience of 90 cases, 75 of which were complicated by post-operative retention of urine and 15 by post-operative cystitis. As a rule, it was not necessary to inject more than 3 c.cm. of a 40 per cent. solution of urotropine, but it proved advisable to inject at least 5 c.cm. when gynæcological operations had encroached considerably on the bladder. Systematic examinations of the urine were carried out, but in no case did they reveal ill-effects from this treatment. But in 4 per cent. it gave rise to troublesome tenesmus, and in another 4 per cent. it proved ineffective, the services of the catheter being required. As a rule, spontaneous micturition occurred from two to ten hours after an injection. Control observations with the catheter showed that in 72 per cent. of the cases treated the spontaneous evacuation of the bladder was complete. On the other hand, more than half of the patients who were not treated with urotropine did not empty their bladders completely, even when there was no absolute retention, the residual urine in these cases measuring from 10 to 150 c.cm. Dr. Pasch confirms the observation of von Stapelmohr that giving even large doses of urotropine by the mouth is of comparatively little value. A few years ago the disinfectant action of urotropine on the urinary tract was supposed to depend on the liberation of formaldehyde, but the recent investigations of Buzello and others suggest that this explanation may be incorrect.

THE LESSONS OF ANIMAL DISEASES.

PIGLINGS of a few weeks old are very apt to suffer from a disease which has been ascribed in America to cotton-seed meal poisoning. It is characterised mainly by severe anæmia, dyspnœa, dropsical effusions, and liver changes. In the current number of the *Journal of Pathology and Bacteriology* (vol. xxvii., p. 201) and in the *Biochemical Journal* (vol. xvii., p. 204; vol. xviii., pp. 265, 273) Dr. J. P. McGowan and Mr. A. Crichton give a most interesting account of their observations on the condition at the Rowett Research Institute, Aberdeen. As regards causation, they hold that the condition is essentially due to iron deficiency, accentuated in some instances by incomplete foods, such as cotton-seed meal; they show that it may be prevented and cured by feeding iron oxide to the sow. The blood is very anæmic, the percentage of hæmoglobin falling to 20 or 30 per cent. from the 80 per cent. on the human scale which is about normal for young pigs; histologically there are abundant signs of marrow activity. The heart is much dilated and enlarged; there is frequently hydropericardium, though considerable ascites is more constantly found; in animals which more or less recover these effusions into the serous sacs are followed by adhesions which mat the viscera together. Most remarkable are the changes in the liver, where there is necrosis of most of the central parts of the lobules with severe fatty change, which is distributed patchily through the organ and not uniformly. The administration of iron will cure the liver with or without the induction of a perilobular cirrhosis. The other organs show nothing particular. There is evidently much work still to be done in elucidating the pathology of the disease. In particular, the relation of the different lesions to one another is at present quite obscure. But what has been done certainly seems of substantial importance if only for the discovery of a lobular degeneration of the liver with a patchy distribution—a condition we believe to be unknown in human pathology, and forming a connecting link between the necrosis of whole pieces of liver (as in acute atrophy) and the necrosis of parts of every lobule throughout the liver (as in chloroform poisoning). We hope the authors or others will pursue the matter further, and, not content with being able to cure the disease, will work out its pathology in detail.

The classical methods of morbid anatomy and experimental pathology are often neglected, we regret to think, through investigators being satisfied with obtaining an effective practical control through the discovery of the ætiology; there is a good deal still unknown about the pathology of malaria, and an immense amount remains to be discovered about the deficiency diseases. And if pathology is to progress in its understanding of the anatomy and physiology of disease it must draw its data from the widest sources. Like any other science standing on its own legs, it is concerned to discover the general rules which govern the reactions of live organisms to disease. Substantial progress has been made from an almost exclusively human standpoint; it is plain that this is reaching its limits of fruitfulness. And it is encouraging to see that the necessity for a wider outlook is being realised in various directions. We have a movement for the more accurate study of animal diseases of economic importance; the Royal Society of Medicine has established an appropriate section. Dr. Herbert Fox has published a book about his experience of disease in the wild animals at the gardens in Philadelphia. Prof. Theobald Smith[1] lately addressed an audience in Edinburgh on the import of comparative pathology with the breadth of view which one would expect from his achievements in philosophical bacteriology. Distemper is being taken seriously in hand, some say because of the probable importance of the results when they are applied to analogous human diseases, some say because we are a decent people and love our dogs as well as ourselves. What excuse is given for the pursuit of this particular piece of information does not perhaps matter very much; if there were no analogous diseases in man, and if we took a Frenchman's view of the dog, distemper would still be worth finding out about, and we hope the money will be forthcoming to finance a worthy inquiry. Perhaps, too, the proceeds of the new aquaria in Regent's Park may enable the Zoological Society to make a more extensive provision for the application of the modern methods of a medical school and hospital to the animals under their care. Comparative pathology has waited a long time; it seems likely that by one route and another more rapid progress will soon be made along the path indicated by Hunter, James Paget, and William McEwen.

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[1] Zentralblatt für Gyn., 1924, xlviii., 706.

GENESIS OF MINERS' NYSTAGMUS.

Dr. F. Robson's theory of the genesis of coal-miners' nystagmus—that the main factor in its causation is not defective light, but some gaseous emanation from the coal itself, probably carbon monoxide—was set out in our columns after he had read his paper to the South Wales Institute of Engineers a year ago.[2] The paper is now republished in book form,[3] together with the discussion to which it gave rise, generally, it must be admitted, not very favourable to the author's views, though they are by no means without support, both medical and lay. The subject is such an important one from the economic point of view that it is a matter of regret that medical opinion respecting it is even now by no means unanimous. The data on which theories have been formed are mainly statistical, depending on the number of cases of nystagmus in miners which obtain compensation under different conditions and in different areas. These statistics, as has been pointed out by several of those who have taken part in discussions on the subject, are liable to several fallacies. One is the definition of the disease. In ordinary medical parlance nystagmus means an involuntary oscillation of the eye-balls. It is found that a considerable percentage of miners, after a certain number of years' work at the coal face, are subject to this malady. Only a small proportion of these, however, complain of any unpleasant or disabling symptoms. When the question of compensation comes in, the number of those claiming it is said to depend largely on the amount of compensation obtainable and its relation to wages, and as neither of these factors have been by any means constant, we see at once that there must be a material source of fallacy in figures derived from compensation statistics alone. A further source of fallacy is that along with actual oscillation of the eye-balls a number of neurasthenic symptoms frequently occur. By some these are looked upon as an essential part of the disease, by others as a separate entity. In the schedule of 1913 cases of so-called miners' nystagmus were admitted for compensation even in the absence of any oscillation of the eye-balls. The subject is further complicated by the fact that the development of miners' nystagmus almost always takes many years even under the most unfavourable conditions, and by the further fact that once a miner has developed it he is very apt to suffer a relapse on returning to work after an apparent cure. Any statistical argument should take all these factors into account, besides the factor of cramped posture, which is still believed to be important by some, the factor of noxious gases which Dr. Robson is chiefly concerned with, and the factor of deficient illumination which his book cannot by any means be considered to have effectually disposed of.

THE DEMONSTRATION OF S. PALLIDA IN TISSUES.

A SIMPLE and remarkably expeditious method of demonstrating the *Spirochæta pallida* in tissues has been devised by Dr. Walther Kranz,[1] of the skin department of the University of Cologne. The method is a modification of the well-known procedure of Levaditi, over which, however, it has important advantages; these depend upon the fact that impregnation with the silver nitrate is carried out in the sections and not in the uncut tissue. This renders the impregnation much more certain, and also allows of a reduction in the time allotted to this step. The method is applicable to either frozen or paraffin sections; the material must, of course, be formalin fixed. In working with frozen sections Dr. Kranz first washes in distilled water and then carries a number of the sections up to 15 into a 0·1 per cent. solution of silver nitrate in distilled water, contained in test-tubes; in this they are left in the paraffin oven for from 4 to 24 hours. They are then washed in distilled water and carried over into a solution consisting of pyrogallol, 0·2 g.; aq. dist., 15 c.cm.; and mucilage of gum-arabic, 5 c.cm. The reduction of the silver nitrate takes from 30 to 60 minutes, and should be controlled under the microscope; when it is complete the sections are washed in running water to free them from the gum, carried through alcohol and xylol, and mounted in the usual way. In dealing with paraffin material the sections are first fixed to the slide and freed from paraffin, and then taken through the solutions as described above. No counterstain is necessary, and the picture is that of a Levaditi preparation. As is evident from the above, the whole procedure can readily be carried through within the period of an ordinary working day, and should prove of great use to workers on syphilitic material.

CUTIS VERTICIS GYRATA.

UNDER this denomination Unna described a condition characterised by irregularity of the surface of the hairy scalp over the sinciput and contiguous parts, with the formation of swellings separated one from the other by sulci which resemble the appearance of the cerebral convolutions. For the most part these swellings are placed in lines radiating from the vertex, somewhat undulating, and of a breadth varying from 2–3 cm. and from 10–15 cm. in length. Their surface is convex in the direction of their width. More rarely the lines are arranged in parallel fashion with regard to the sinciput. The swellings and the sulci are much more marked near the vertex. Andry described a similar condition under the name "Pachyderme vorticillée du cuir chevelu," and Calle under the name "Cuir chevelu encephaloide." It was Jadassohn who first drew attention to this condition at the Ninth Congress of Dermatology held at Berne in 1906, and the following year Unna published three cases in which he attributed the condition to a disproportion between the dimensions of the skull and those of the skin which had become exuberant owing to a kind of hyperplasia of its superficial parts. Dr. Benedetto Sparacio, of the Dermatological Clinic in the University of Rome, has lately published another case of this rare and interesting condition.[1]

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[1] Edinburgh Medical Journal, 1924, vol. xxxi., p. 221.

[2] THE LANCET, 1923, i., 961.

[3] Coal-Miners' Nystagmus. By Frederick Robson, M.D. Reprinted from the Proceedings of the South Wales Institute of Engineers. Published by the Institute, Park-place, Cardiff, 1924. Vol. xxxix., Nos. 2 and 4. Pp. 556. 10*s.* 6*d.*

[1] Münch. med. Woch., May 9th, 1924, p. 608.

The patient was a woman, aged 53, who, early in November, 1922, began to suffer from excoriations on the tongue, pharynx and mucous membrane of the cheeks, lips and nose. About two months later bullæ appeared on the shoulders and other parts of the skin. In April, 1923, she was admitted to the clinic and noticed to be suffering from pemphigus, and as she complained of itching of the scalp the hair was cut and numerous bullæ were found there. About five months later when the hair was cut again the hairy scalp was seen to have developed the condition known as "cutis verticis gyrata." The changes which occupied all the hairy scalp except those parts corresponding to the lower third of the temporal bones, the middle third of the occipital, and lower part of the frontal were much more marked over the vertex. Over these areas there were swellings separated by sulci of a depth of 3–4 mm. Not all the sulci were of the same depth or length, and in some parts they were hardly noticeable. One small sulcus in the right temporo-parietal region, which measured 3 cm. in depth, was observed during the space of a month to have become much deeper and longer. Over the whole area about 31 sulci were counted. The development of the hairs were normal; those which grew on the edges of the sulci were intertwined, giving the appearance of a brush. The entire scalp was freely movable over the skull. A histological examination was made possible owing to the death of the patient, and the sections showed that in the parts corresponding to the sulci every trace of these had disappeared so that the sections presented a plain surface, while, on the other hand, the lower epicranial superficies appeared undulating and indented, corresponding to the *retinacula cutis.* The only histological change noticed was a slight inflammatory condition represented by a small-celled infiltration of the papillary bodies and the superficial layer of the derma. There were no changes in the middle and deep layers, nor in the vessels, sweat glands, or sebaceous follicles.

In view of these histological observations, the presence of the sulci noticed during life cannot be attributed to cicatricial retraction, nor to hyperplasia of the connective tissue, nor to a condition of elephantiasis of the derma causing the brain-like swellings, explanations given by such observers as Verres, Vignolo-Lutati, and Pasini; any nævoid change must also be excluded. When the disappearance of the swellings and sulci post mortem, together with the normal structure of the scalp, is taken into consideration with the appearance of the undulations observed on the deeper layer in relation to the epicranial aponeurosis, it is difficult to avoid the conclusion that in this case the cutis verticis gyrata was caused by a temporary condition of the skin referable to the epicranial aponeurosis and retinacula, analogous in certain respects to that which takes place in the frontal region when the brow is wrinkled by contraction of the frontal muscles. The brain-like swellings may reasonably be attributed also to a condition of œdematous turgescence which disappeared post mortem contained between rigid and non-infiltrable zones such as those corresponding to the retinacula; the histological examination does not negative such a supposition. The pathology of cutis verticis gyrata may be summed up as a special condition consequent on an inflammatory process, perhaps more dynamic than static, determined by the relations between the superficial fascia, epicranial aponeurosis, and retinacula cutis.

THE summer session of the General Medical Council opened on Tuesday, May 27th, Sir Donald MacAlister presiding (see p. 1132).

THE house and library of the Royal Society of Medicine will be closed from Saturday, June 7th, to Monday, June 9th, both days inclusive.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXIII.—TREATMENT OF FRACTURES OF THE ANKLE.

FRACTURES in the region of the ankle include Pott's fracture and its converse, fracture of one or of both malleoli; and fracture of the posterior margin of the articular surface of the tibia, in association with posterior dislocation of the ankle. Variations of the more typical fractures are constantly met with.

Relation of these Fractures to the Function of the Foot.

Fractures of the ankle are important mainly in so far as they affect the chief function of the foot and ankle, that of bearing the weight of the body and of propelling it. Recovery of this function is the chief object of treatment, though for cosmetic reasons also correction of displacement is desirable. If the posterior displacement of the foot is not corrected, it means that the patient will be unable to dorsiflex the foot and so will lose one of the most important movements necessary in walking; indeed, this movement is essential if the patient is not to walk with a limp. If the displacement of the foot laterally—in the case of Pott's fracture—is not corrected, a condition of painful traumatic flat-foot results. The arches of the foot are not rigid but plastic structures, and their support is dependent upon a balanced action of certain muscle-groups. This balance is disturbed by any alteration in the normal line of weight-bearing. Angular deformity, which alters the horizontal axis of the ankle-joint, is associated with the worst kind of functional disability. It is to be noted, therefore, that in all these fractures the position of the foot in relation to the leg must be corrected in both the sagittal and coronal planes.

Details of Management.

Antero-posterior and lateral radiograms of the foot and ankle should be taken. If displacement is present, it should be reduced under a general anæsthetic. The temptation in many of these cases is to put the limb up in such an apparatus as a box-splint and to expect the splint, aided by massage, to do the work of reduction, thus avoiding the necessity of an anæsthetic. Such a policy cannot be too strongly condemned, as it is just here that a little want of resolution is paid for in a poor functional result. Under the anæsthetic it is surprising how easy it is to secure complete and accurate reduction. Special splints have been devised from time to time for controlling a tendency either to backward or lateral displacement of the foot, but for efficiency a plaster-of-Paris casing is much to be preferred. It offers many advantages. It controls displacement in both planes and once applied there is no need for constant attention and readjustment. If applied with care, there is no real fear of interference with the circulation or of pressure sores. It is such fears, which have really very little to support them, that have prevented the more general employment of the very best means at our disposal for securing fixation in many fractures.

Reduction and Application of Plaster.

In a Pott's fracture, with displacement, the surgeon faces the sole of the foot. In a fracture of the left leg, he grasps the leg below its middle with the left hand. With the right hand he grasps the foot, and corrects the backward displacement by pressing downwards with the left hand and lifting the foot forwards with the right. The lateral displacement of the foot is then corrected by strongly adducting it; in other words, the foot is flexed towards the medial malleolus (Fig. 1). At the same time it is dorsiflexed to a position of 5° or more beyond the right angle. An assistant then powders the skin and envelops the limb from toes to mid-thigh in woollen bandages. A plaster-of-Paris splint is then made for fitment along the posterior aspect of the limb. A plaster bandage, six inches or so in breadth, is placed in a bucket of warm water. The excess of water is gently expressed, and the bandage unrolled backwards and forwards upon itself in re-duplications about two feet long. Each fold is rubbed rapidly into the one preceding, by the flat of the hand, until the bandage is exhausted. In this way a soft pliable splint is available. It is then carefully applied and moulded to the posterior aspect of the leg and sole by the assistant. The surgeon maintains the reduction while this is being done, and finally insinuates his fingers and grasp round the soft splint also. In point of fact this is not difficult, and should any displacement occur it may be corrected at once on the splint. Both leg and splint now being held securely by the surgeon, the assistant applies a plaster-of-Paris bandage round the leg and splint from the toes to the mid-thigh (Fig. 1). This bandage is applied evenly and without such undue pressure as would tend to constrict the limb in any way. A third and fourth bandage are then employed to cover the same ground as the first, and so the plaster-casing is completed. Just as the plaster is setting, the surgeon may make a final adjustment to secure dorsiflexion of the foot and then moulds the plaster in the sole to support the arches of the foot. When set, the plaster is trimmed by a strong knife to expose all the toes. In this way a watch may be kept upon the integrity of the circulation. The majority of fractures of the ankle have not been associated, in my experience, with gross swelling such as text-books often describe. It is a good plan, however, to bi-valve the cast at once into two equal portions by cutting it longitudinally down both sides. Next day radiograms are taken to see that reduction is complete.

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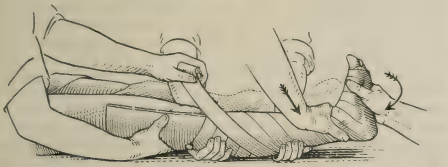
[1] La Riforma Medica, xl., April 14th, 1924.

FIG. 1.



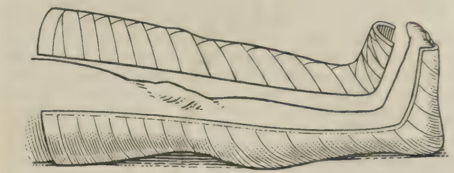
Fixing gutter-splint to limb by application of plaster bandage. The surgeon (on whose arms the arrows are placed) maintains the reduction while the assistant applies the bandage. A second helper supports the limb in the manner indicated.

After-care.

On the day after reduction and fixation the top half of the casing is lifted off and massage begun as the limb lies in the posterior shell (Fig. 2). The full therapeutic effect of massage is secured in this way, and it is not necessary to lift the limb out of the casing until the end of ten days or a fortnight. Massage may be given twice daily, the two portions of the cast being retained in position by a roller bandage. Active movement of the toes is encouraged at once, and when the time comes for lifting the limb out of the casing daily for massage, active and passive movements of the ankle are begun. Opportunity is taken meanwhile to alter the heel of the boot by prolonging its inner half forward for ½ inch and to introduce a wedge of leather, ¼ inch thick, to raise the front inner corner of the heel. Such an alteration helps to support the arch of the foot when weight-bearing is begun. In eight weeks the patient may put on his boot and start partial weight-bearing with the aid of crutches. Indication that full weight-bearing is possible is to be obtained by testing the site of fracture for local tenderness on pressure. If tenderness is present it means that the callus has not completely consolidated and further protection is necessary. In these cases such protection is afforded by the employment of a short iron along the outer side of the leg, let into a slot in the heel at one end and retained around the leg below the knee by a broad leather cuff. It is used in association with an inside T-strap of leather round the ankle.

An alternative plan is to support the ankle and foot by a "stirrup-strapping." Four strips of adhesive strapping, 2 feet long and 1 inch broad, are cut. The patient is instructed to hold the foot dorsiflexed and inverted, while the surgeon applies the first strip from the middle of the outer aspect of the leg downwards over the lateral malleolus across the sole and up the inner surface of the leg. The other strips are then applied in the same way in an imbricated fashion and bound down to the front of the leg and ankle by short cross-pieces of adhesive plaster. A narrow domette bandage is then put on neatly over all, and in this way an excellent ambulatory splint is obtained.

FIG. 2.



Bisected case: showing plaster-of-Paris splint divided into anterior and posterior halves for exposure of the limb. Note the dorsiflexed and inverted position of the foot.

For other fractures in the region of the ankle the same methods are employed.

Fundamental Rules.

The principles followed may be formulated in the following fundamental rules:—

(1) Complete anatomic reposition should be the goal in all cases.

(2) When displacement is present, the plan of treatment should be reduction under an anæsthetic followed by immobilisation in a plaster-of-Paris casing.

(3) When rigid dressings are applied care should be taken to fix the foot and ankle in the position of optimum function—that is, with the foot at or beyond right-angle dorsiflexion, the foot inverted and the arches supported.

(4) The fundamental supporting structures of the foot being largely muscular, their tone and strength must be preserved by beginning massage and active movements at as early a date as possible.

(5) When weight-bearing is first permitted, the foot being weak, support should be given by the use of a heel whose inner border is prolonged forwards and elevated.

W. A. COCHRANE, F.R.C.S. Edin.,
University Tutor in Clinical Surgery, University of Edinburgh.

BRISTOL ROYAL INFIRMARY. — At the annual meeting of the governors of the infirmary on May 21st, Lieut.-Colonel P. G. Robinson, President, in the chair, the annual report showed that the year 1923 had been one of progress. An up-to-date department for dental patients was opened during that year and the number of dental patients had been doubled. In the wards and out-door departments of the institution 61,500 patients had been treated, a number which was equal to one-sixth of the population of Bristol. A large amount of work had also been done in the maternity department and in the children's wards. Reference was made to the bequests of the late Mr. H. H. Wills, who, in addition to a sum of £11,250, had given the infirmary 21,000 ordinary shares in the Imperial Tobacco Company (of Great Britain and Ireland), Ltd. The total value of Mr. Wills's bequests amounted to date to £83,700. Unfortunately, there was a deficit of £4000 on the year's working of the infirmary, but this, it is hoped, will not interfere with the opening of new wards as soon as increased nursing accommodation is provided.

Special Articles.

THE PEOPLE'S LEAGUE OF HEALTH.

FIRST INTERNATIONAL CONGRESS AT WEMBLEY.

THIS congress was opened by Viscount Burnham, the President, at Wembley on May 21st. The President said that the League had done much pioneer work in educating the public as to health matters. Much of the success of Public Health Acts depended upon the support of public opinion. When in Jamaica last year he saw how much the officers of public health were hampered and obstructed by the apathy and ignorance of the multitude. Great things had, however, already been done in combating tropical diseases.

The Housing Section.

Mr. Neville Chamberlain, M.P., who presided over the Housing Section, also pointed out that progress in public health depended upon public opinion. All Governments in this country followed, but did not lead. Housing was a problem of old countries and especially of the industrial towns of old countries. It was a legacy from the population of 100 years ago who built houses according to the standard of that time. It was a pity no one had yet invented paper houses. Houses were at present built to last 80 years, and would be out of date long before that time. It was not only rehousing that was necessary, but redistribution of the population. The housing question therefore was bound up intimately with the transport system, and housing reformers needed to exercise much forethought.

Mr. James Stewart (Parliamentary Under-Secretary for Health in Scotland), referring to the paper houses described in Bellamy's "Looking Backward," said that 80 years was much too long a life for a house. His experience of wooden houses in America was that they were quite warm and comfortable. He agreed with Mr. Chamberlain that the housing problem was not entirely the result of the capitalist system, but that it was rather due to the general ignorance of our forefathers. For instance, the homes of the aristocracy which had been converted into Government offices were wanting in light and air. Money spent in housing would bring a return, but rather resembled capital invested in commercial enterprise, which did not earn dividends at once. As a native of Glasgow he was appalled by the percentages of the population living in homes of one and two rooms respectively. He believed that much of the tuberculosis in Glasgow was due to housing conditions. £220,000 a year were spent in efforts to cure tuberculosis—mostly futile. Better housing would not only mean less tuberculosis, but less expenditure on widows and orphans, on the sick poor, on voluntary hospitals, and on the results of crime and intemperance. Housing had become the sport of politicians. There should be a whole-hearted effort of all parties to find a remedy. He agreed with Mr. Chamberlain that redistribution was necessary. He hoped for smaller towns and cities. The intelligent use of electric power would help in this direction. If we did not solve the housing problem we were doomed as a nation.

Dr. John Robertson (M.O.H., Birmingham) said that many English towns had the evils of back-to-back houses to put against the tenements of Glasgow. The back-to-back houses were mostly three-roomed and *did* allow the children to get out, and for that reason were infinitely preferable to the Glasgow flat system. He was hopeful about town-planning, but urged that if town-planning were to be successful provision must be made for the recreation of the population at every age. If the number of houses per acre were limited there would be open-air space for the baby and the toddler in the garden under the eye of the mother. Small school-children needed playgrounds near their homes. For children from 8 to 10 years special accommodation was needed in the parks; from 11 to 12 playing fields; from 14 onwards larger playing fields. After 25 recreation could usually be paid for. Allotments were essential, and at present were too far from the homes and were held on too precarious a tenure. No town in the country had yet made adequate provision for the recreation of its population. He estimated that eight acres were needed per thousand of the population: five for games, two for allotments, and one for parks for the elders. This open space might in the future be provided on each side of the main arterial roads, which the noise of the traffic would render unsuitable for housing sites.

Dr. F. E. Wynne (M.O.H., Sheffield) said that housing had become such a burden on rates and taxes that local authorities had been obliged to select good tenants. This was wrong. The evacuation of slums should be the first charge on housing. Sickness and disability caused by bad housing cost more than the subsidies to housing. There was no difficulty in showing that the bad conditions in the slums caused high death- and disease-rates. An area in Sheffield which was condemned by Dr. Robertson had not been dealt with yet. He thought this was not a time for rigid adherence to ideals and that every housing scheme should include some very cheap temporary houses. It was true that the tenants from the old slums might make these into new slums, but he thought this could be prevented by a combination of firm administration and Octavia Hill methods.

Dr. Leonard Hill pleaded for greater simplicity in houses. As long as one got plenty of open air and sunshine the house was a matter of little importance. The new houses were already out of date according to modern hygiene. He suggested that the local authority should secure areas and allow persons who wanted houses to erect their own free of any restriction. The local authority would only need to provide pure water and arrange for the careful disposal of the sewage and excreta.

Food Section.

Sir W. Arbuthnot Lane, in opening the proceedings of the Food Section, said that he would like to see the food experts present at the congress arrange a dietary which would give rise to three or four motions in the 24 hours. The baby, during its napkin stage, was the only member of our community sensibly treated. After babyhood a system of regulated constipation was taught.

Prof. E. Mellanby pointed out that practically every child of 5 had decayed teeth and that rickets was a very common disease. Cereals were the chief cause and oatmeal was the worst cereal. We must eat cereals, but fortunately we were able to antagonise the bad effects of the cereals by an adequate supply of foods containing the fat-soluble A-vitamin. Cod-liver oil was the best source of this vitamin and milk had a better effect than butter. Sunshine in virtue of the ultra-violet rays would also antagonise the bad effects of cereals, but was not efficacious if the diet were very bad. A small daily dose of cod-liver oil was beneficial during the winter when sunshine was scarce.

Prof. R. H. A. Plimmer dealt with the various kinds of protein. He explained why one protein was more valuable than another in promoting growth and nutrition. The protein of cereals alone was not sufficient, but the protein of cereals and green-leaved vegetables combined might suffice for a strict vegetarian.

Prof. J. C. Drummond dealt with the great value of milk as a food. He instanced the bad effects of the scarcity of milk on the children of Central Europe, and the wonderfully good results obtained by providing ill-nourished school-children in America with an extra pint of milk per day. The experiments in America were being continued, but up to now it appeared that the improvement produced by the milk was out of all proportion to its caloric value and was probably attributable to the vitamin-content of the milk. Research was now in progress as to the effects of pasteurisation and desiccation on milk, and up to the present it would appear that the food value of these forms of milk, if properly prepared, was much the same as that of untreated milk.

As the result of the discussion which followed the reading of the papers, a resolution was adopted requesting the Council of the People's League of Health to appoint a special committee to draw up for popular use a pamphlet of instructions as to the dietary necessary to promote good nutrition and health.

Air, Light, and Water.

The second day's proceedings of the congress were of equal interest. In the morning the members listened to an exposition of the latest views as to the value of light and air by well-known authorities under the presidency of Sir Henry Gauvain. Dr. Fortescue Fox put in a plea for the systematic study and organisation of British spa treatment, and instanced the value of such treatment for chronic rheumatism and breakdown in middle life. The chief event of this section was Dr. A. Rollier's fascinating and suggestive paper on the rôle of the sun. The paper described the methods adopted at Leysin, their preventive application to debilitated children in the "Sun" School at Cergnat, and the possibilities of applying these principles in everyday life; and was illustrated by lantern slides showing the wonderful results obtained in the treatment of tuberculous cripples.

Some Overseas and Other Diseases.

Sir Leonard Rogers dealt with leprosy. There were probably more than 2,000,000 lepers in the world. In spite of the success of modern treatment by chaulmoogra oil, he estimated that only one-tenth of the lepers in British Dominions were receiving treatment. Segregation had not been applied scientifically and perhaps 75 per cent. of the lepers at present segregated were non-infectious.

Dr. George Low, in discussing filariasis, showed that the mosquito (*Culex fatigans*), which acted as the intermediate host of the causal worm, was more easily extirpated than the malaria mosquito. *Culex fatigans*, like stegomyia, the vector of yellow fever, had domestic habits and was found in water-barrels, &c., near dwellings. In the West Indies both these mosquitoes were tackled simultaneously. In many British colonies anti-mosquito measures were still not conducted with sufficient energy.

Dr. P. H. Manson-Bahr described the modern usage of antimony preparations, arsenical derivatives, bismuth, quinine, Bayer "205," and emetine in the treatment of kala-azar, bilharziasis, trypanosomiasis, yaws, malaria, dysentery, liver abscess, and other tropical scourges.

Dr. Andrew Balfour wound up with a paper on vermin and their relation to disease, using the term "vermin" in a wide sense. It may be confidently said that, at the close of the session, none of the audience disagreed with Dr. Balfour's pronouncement that our efforts to destroy vermin are too half-hearted, and that our interest in the promotion of research is altogether inadequate when compared with the greatness of our responsibility.

Mental Hygiene.

At the morning session of May 23rd the Conference settled down to discuss the hygiene of the mind, under the presidency of Sir Courtauld Thomson.

Dr. Farquhar Buzzard insisted that the term "nerves" must go. It was a term invented for our deception because we did not like talking about our minds. Medical opinion was unanimous that hope for future improvement lay in the prevention and early detection of disorders of function. Why should a man confess without a blush to having a disorder of the liver, perhaps the result of over-eating or over-drinking, and his brother be afraid to admit a disorder of the mind, caused by overwork or anxiety. If the term "nerves" were abolished and the prejudice about the use of the word "mental" disappeared, they would have taken the biggest step forward in the promotion of mental hygiene.

Sir Frederick Mott strongly advocated the establishment throughout the country of more hospitals like the Maudsley, and pointed out that the study and treatment of early cases would be much more useful if the law could be so altered that patients could be detained for more than 24 hours, even against their wish.

Dr. H. Crichton Miller said there was no hard-and-fast differentiation between sane and insane. Some asylum cases are curable, many uncertified cases of mental breakdown can be saved, and a very great proportion of both might be prevented. Much research is still called for, but much of our present knowledge is not applied, partly because public opinion is not educated and partly because the necessary funds are not available. We need greatly increased personnel in our asylums, more research into individual cases, and more chairs in our mental schools which will attract the best brains in the alienist world. Perhaps more important still we need conditions for the treatment of minor mental disorders which will secure the coördination of specialised medical skill for individual cases. Such a vision needed great financial support.

Dr. R. G. Rows said the recognition of the fact that the delinquent was made, not born, would put an end to the feeling of helplessness and hopelessness and justify the hope that change of environment and education of parents and child would do much to prevent delinquency.

On the following day Prof. George M. Robertson contributed an interesting paper on the Hospitalisation of the Asylum, and confirmed the views of other speakers as to the need for an increased medical staff in asylums, more research, and more careful study of individual cases. He advocated several changes calculated to make asylums more like hospitals, such as the admission of all voluntary cases, whether they can pay or not, the temporary notification of cases by two medical men in lieu of certification, and the more frequent revision of legally detained cases.

Industrial Hygiene.

At the afternoon session of May 23rd the hygiene of industry was considered. Sir Thomas Oliver presided, and the speakers included Prof. E. L. Collis, Dr. C. S. Myers, Director of the National Institute of Industrial Psychology, and Dr. F. Shufflebotham.

Dr. Myers pointed out that industrial psychology is concerned in alleviating the strain arising from defective arrangements of hours of work and rest, or from rare or too frequent changes of work; from waste of energy due to unsystematic training, unnecessary and unrhythmical movements, needless standing and stooping, &c.; from inefficient illumination, excessive vibration, humidity and temperature, &c.; and from unfitness for the occupation adopted. The hygienic value of industrial psychology was clearly reflected in the diminished sickness records, the increased output, and the greater happiness of the workers, obtained by its application.

In his paper on lead poisoning among pottery workers Dr. Shufflebotham pointed out that acute cases of lead poisoning had been wiped out by the Home Office regulations, but that chronic cases still occurred and were very unfairly treated under the Workmen's Compensation Act. The monthly examinations by the factory surgeons had acted beneficially to leadworkers, but the power to suspend workers who might have been engaged in this occupation for 30 or 40 years, presumably because they were suffering from lead poisoning, was a manifest injustice.

Dr. Ralph C. Matson, Director of the National Tuberculosis Association, U.S.A., described a typical American intensive health experiment, by means of which the population of Framingham, Massachusetts, numbering 17,000, had been provided, after a study of the conditions, with an up-to-date organisation, where practically none existed before, to the great benefit of the residents and industrial workers, and with a lowering of 16 per cent. in the general death-rate and about 50 per cent. in the mortality from tuberculosis and among infants.

Legislation on Health Matters.

Lines of progress for the future and desirable legislative changes were the theme for the last session on Saturday, May 24th, Miss Margaret Bondfield, M.P., presiding. In opening the session Miss Bondfield said that although legislative changes must come they would have little effect in raising the standard of health unless the people were roused to the importance of obeying the laws and seeing that they were strictly administered. No matter what the legislative changes, there would always be room for voluntary effort. Amongst the legislative changes required were amendments of the Midwives Act, powers for the registration and inspection of maternity homes, and power for the compulsory removal to hospital of persons who were a danger to others. Referring to the House of Commons debate on the maintenance of the blind, Miss Bondfield said more could be done at childbirth and in early infancy to prevent blindness —a much more sensible policy.

Prof. W. E. Dixon made out a strong case for the standardisation of drugs.

Dr. C. J. Bond pressed the need for an institutional branch of a unified health service, coördinating the work of all institutions dealing with both mind and body. He wanted State aid in such a way as to retain the present voluntary and local management. The interests of the Ministries of Education and Health should be fused, the teaching of personal, sex, and social hygiene should become part of our educational system, and the Ministries of Health and Education should coöperate to secure the education of exceptional children.

Dr. F. E. Fremantle, M.P., emphasised the rôle of the individual. Voluntary effort should be encouraged on insurance principles. Laws should be so supple as not to stifle voluntary help and effort.

Resolutions.

Resolutions were passed in favour of :—

1. Establishment of an adequate hospital and institutional service instead of the present partial and incoördinated service, so frequently curtailed by lack of funds.
2. Action to be taken by the Ministry of Health with regard to the supply of wholemeal or standard bread and the education of the public as to the disadvantages of bread made from highly refined flour.
3. Prohibition of the unnecessary addition of preservatives to food.
4. Need for the extension of legislative control to infant foods consisting partly or mainly of starch.
5. Powers for the protection of children from the infection of advanced cases of tuberculosis, either by the removal of the children or of the infecting case from the home.

The Conference terminated with votes of thanks to all who had helped to promote its success. Miss Olga Nethersole is certainly to be congratulated in having assembled a large body of medical speakers, each eminent in his own particular line. The proceedings of the Conference will be published in book form in order to reach a wider circle.

SOUTH LONDON HOSPITAL FOR WOMEN. — On May 22nd the new wing of the hospital at South Side, Clapham Common, was opened by the Duchess of York. The Mayor of Wandsworth referred to the hospital, which was opened by the Queen in 1916, as an example of the efficacy of women's work and paid a special tribute to Lady Cowdray's full-hearted support as its chairman. Upwards of 50 purses, containing a total of some £1100, were presented to the Duchess of York by representative bodies and citizens of South London towards the cost of the new wing which has been furnished throughout, including theatre equipment, by an anonymous donor. The wing provides accommodation for 38 additional patients and is expected to lessen substantially the waiting list, on which at present some 600 names stand. To defray the cost of the necessary building alterations another £6000 are needed.

THE DIFFICULTIES OF INSURANCE PRACTICE.

THREE OFFICIAL INQUIRIES.

WE print below summaries of the reports of three Inquiry Committees appointed by the Minister of Health since the beginning of the year. Each committee was appointed to investigate a representation made by an Insurance Committee that the continuance on the panel of an insurance doctor would be prejudicial to the efficiency of the medical service of the insured.

The facts only are summarised which the Inquiry Committee found to be proved by the evidence submitted to them. The decision given by the Minister after considering the report of the Committee is appended to each case.

I.—*Inadequate Deputising Arrangements: Irregular Certification.*

Members of the Committee: Mr. E. H. Tindal Atkinson, C.B.E., Barrister-at-Law (Chairman), Dr. J. Divine, Dr. Alex Forbes.

The doctor had been in insurance practice since 1912 ; for several years he had practised in a town with a population of 44,000. He had over 1600 insured persons on his list. He had two consulting rooms, one at his own residence and one at a neighbouring smaller town.

With regard to the specific charges made in the representation of the Insurance Committee, the Inquiry Committee found the following facts to be proved :—

1. The doctor left home on August 4th for a short holiday, returning on the 9th. During his absence his house and consulting rooms were closed and no arrangements were made with any other doctor for the treatment of his insured patients. The local medical officer of health, Dr. A. B., had consented at the doctor's request to attend two of his patients (one of whom was an insured person), but had not been asked to exercise any general supervision over the needs of the insured patients, neither could he have done so owing to his public duties. The Insurance Committee received no complaints from any insured persons as to want of attention during the doctor's absence.

At the hearing the doctor produced a notice which stated that he was absent until August 9th, and that cases of emergency could be referred to Dr. A. B. or to another doctor. This notice, he stated, was affixed to the door of the consulting room during his absence, but the Insurance Committee contended that this notice had never been exhibited.

2. Before going on his holiday the doctor signed intermediate certificates for eight insured persons on his list, the certificate in each case stating that he had examined the patient on a date when he was, in fact, away. The causes of incapacity were mostly ailments involving some probability of continuance. On his return the doctor issued a first certificate to an insured person, antedating it one day before his return.

3. The doctor had also issued insurance prescriptions to 16 persons not on his list ; two of these were cases of urgency not admitting of inquiry, and in the other cases there had been some mistake as to names, initials, or identity. The doctor also issued prescriptions to three persons who were on his dispensing list, and in one case he issued 14 post-dated prescriptions to a patient resident two miles from his house.

4. The doctor's wife owned shop premises adjoining the doctor's residence, which were let to an insurance chemist, C. D. A disagreement, which developed into a personal quarrel, arose between the doctor and the chemist in connexion with the renewal of the tenancy. After the date of the notice to

terminate the tenancy the chemist noticed a marked falling off in the number of insurance prescriptions brought to him. The doctor admitted that where insured persons asked his advice as to the choice of chemist he gave it to them, and it did not seem to be disputed that in such cases he had advised them to go to some chemist other than C. D.

The Inquiry Committee drew the following inferences from these facts :—

(1) In leaving for his holiday as he did, the doctor committed a breach of the spirit as well as of the letter of Article 10 (2) of the Terms of Service. [Article 11 (2) in the current Regulations of 1924.] They did not accept the doctor's argument that this Article gives the doctor a right to go away for a week without making deputising arrangements ; neither did they accept the doctor's plea that the ordinary provisions for emergency treatment were sufficient to meet any difficulties which might arise.

> "We think on general grounds that no insurance doctor should be recognised as able to leave his practice even for a few days in a kind of pious hope that all will be well and that his brethren will render assistance in cases of emergency. The fact that no person either complained or gave evidence of having suffered inconvenience must be noted in the Respondent's favour, but this does not alter our view as to the standard of conduct which should properly be attributed to an insurance practitioner when taking a holiday and not faced with a sudden and unlooked for emergency. Even if we had come to the conclusion beyond all doubt that the notice produced to us had been exhibited and that Dr. A. B. had given some promise of supervision, we think that an arrangement of this kind, particularly in view of Dr. A. B.'s position, would have been wholly inadequate for securing proper attention and treatment for insured persons."

(2) The Committee considered that the certification irregularities constituted the gravest of the charges. They thus expressed themselves :—

> "We can conceive of no circumstances justifying an insurance doctor signing his name to a false statement that he had examined a patient on a date upon which in fact he had not or could not have done so. In view of the use to which these certificates have to be put and the reliance placed upon them by societies and others, we think it impossible that any latitude can be allowed or any excuse should be admitted for deliberate inaccuracy or falsity, particularly as to the date of examination."

(3) The issue of prescriptions to persons not on his list revealed a considerable amount of carelessness in keeping records, and the writing of prescriptions for patients on his dispensing list showed at least great carelessness. As regards the issue of post-dated prescriptions to one patient the Inquiry Committee stated :—

> "While we think that in particular cases such a course might be justified, we feel some doubt whether in the present case sufficient grounds were shown for issuing these prescriptions in batches whereby the patient was apparently enabled to obtain an unreasonably large quantity of medicine at one time."

(4) On the charge that the doctor had influenced patients in their selection of an insurance chemist, the Inquiry Committee observed :—

> "The Respondent frankly took his stand on the right of an insurance doctor to give advice to, and at the request of, an insured patient as to the choice of a chemist. While there is nothing in the Acts and Regulations directly affecting this point, we think that any conduct likely generally to interfere with the patient's freedom of choice is not desirable, although there may be particular occasions upon which such advice might rightly be given."

The general conclusion on this particular issue was that the doctor had taken too wide a view of his rights to tender advice, and that his behaviour could be called in question "more in relation to a general standard of conduct than to a test as to whether he complied with his terms of service."

Decision.—The Minister decided that the doctor's name should be removed from the Medical List, and that he should pay the costs of the Insurance Committee.

II.—*Neglect of Patient and Failure to Visit : Intoxication : Irregular Certification.*

Members of the Committee : Mr. E. H. Tindal Atkinson, (Chairman), Dr. H. G. Dain, Dr. C. E. S. Flemming.

The inquiry related to a doctor who had for some years been in insurance practice in a town of 1200 inhabitants ; he had 270 insured persons on his list.

The Inquiry Committee found the following facts as proved :—

1. K. L., an insured person on the doctor's list, was taken ill on Sunday. At the request of her husband, the patient's wife sent for the doctor on Monday morning at about 9.30 A.M. The doctor, who lives about a mile away from the patient's house, arrived shortly after 3.30 P.M. The patient was ill in bed and in pain, and the doctor examined his chest, took his temperature, which was about 104°, and gave him a prescription and a first certificate stating that the patient was suffering from influenza. The doctor's hand was not steady when he took the patient's temperature and wrote the certificate, and he smelt of drink. The doctor did not visit the patient on the next day, but called again on Wednesday, shortly after 3.30 P.M., when the patient's wife complained of his not coming before. The doctor examined the patient whose condition had not improved, took his temperature, which was 104°, and administered a soap enema. The doctor's hand was unsteady and he smelt of drink. After his examination the doctor informed the patient's wife that her husband was very seriously ill, that he would probably not recover, and that it would be advisable for her to send for any relations who might wish to come upon an emergency of the kind. The doctor appeared to the patient's wife to be under the influence of drink both from his manner of speech and from the way in which he walked.

The Inquiry Committee came to the conclusion that while, on both these occasions, the doctor was capable of carrying on a simple and ordinary examination or of giving an ordinary prescription, "he was so far under the influence of drink that his power of judgment and sense of responsibility were affected, and, moreover, affected to a degree which would render him unfit to be in charge of a serious case of illness."

As the doctor failed to call on Thursday and as the patient was then worse, the patient's wife sent for Dr. M. N., an insurance doctor in a neighbouring area, who discovered that the patient was suffering from pneumonia, and immediately took active steps to treat him for this complaint. Dr. M. N. took a sufficiently serious view of the case to cause him to visit the patient daily for some eight days after this first visit. The patient's own doctor had meanwhile called on Friday and, finding that Dr. M. N. had been called in, he expressed some indignation and left the house.

2. At the request of a friend of the patient and to enable the patient to draw his sickness benefit without delay, the doctor signed a certificate stating that he had examined the patient on a day when the patient was, in fact, only seen by Dr. M. N. The doctor failed to enter on the patient's medical record card the particulars of the illness.

3. While the Inquiry Committee found that, upon the evidence adduced before them, the general charge that the doctor was addicted to excessive drinking was not proved, they found as a fact that on three occasions the doctor had to some degree been under the influence of drink. In 1915, while attending to a difficult maternity case of his own, the doctor had sent for Dr. M. N. to assist him and was on that occasion sufficiently under the influence of drink to deprive him of the confidence necessary for him to undertake the delivery of the child, although he was capable of administering an anæsthetic under Dr. M. N.'s supervision. In 1922, when he had occasion to examine a war pensioner, his hand was very unsteady and he smelt of drink. In 1923,

when appearing at an inquiry before the Medical Service Sub-Committee, the respondent was to some degree under the influence of drink.

The Inquiry Committee drew the following inferences from these facts :—

1. The charge of neglect in the treatment of K. L. was by far the gravest of those preferred ; the doctor was mistaken in not calling on the Tuesday, and he was negligent in not calling on the Thursday, having regard to the opinion expressed to the patient's wife on Wednesday. The Committee did not consider that " he was in the least justified in expecting the patient's wife to undertake the responsibility of relying on her own judgment in the matter as to sending for him."

2. As regards the issue of the irregular certificate,

> " The doctor raised no defence to this charge other than what he did was done in kindness. In our view this raises no defence on the plain issue that an insurance doctor had no right to put his name to a false statement on a certificate which is a document upon which of necessity great reliance has to be placed by societies and others."

3. On the charge that the doctor was addicted to excessive drinking the Inquiry Committee heard considerable evidence—much of it necessarily given in a partisan spirit—and they record that many witnesses expressed their confidence in the doctor as a medical man. The Committee came to the conclusion that the doctor—

> " At times suffers himself to be under the influence of drink in a degree which is unwise, but we do not draw an inference that his lapses in this respect are other than occasional. It is scarcely necessary to point out that even such occasional lapses are to be deplored in the case of any medical man."

They point out that, of the specific cases proved, the first took place eight years ago.

Decision.—The Minister decided that the name of the doctor should be removed from the Medical List and that the doctor should pay the costs of the Insurance Committee.

III.—*Negligent Treatment : Careless Dispensing.*

Members of the Committee : Mr. E. H. Tindal Atkinson, Dr. H. G. Dain, Dr. J. Steed.

The doctor had for some years had a panel practice in a town with a population of 100,000 ; he had 321 insured persons on his list.

The Inquiry Committee found that the following facts were proved with regard to the specific charges contained in the Insurance Committee's representation :—

1. E. F., an insured person on the doctor's list, called at the doctor's surgery in the evening and requested the doctor to examine him as he was suffering from abdominal pains. The doctor did not examine him, but gave him a bottle containing some fluid which was labelled " one tablespoonful every four hours." The bottle was of a kind and shape ordinarily used for liniment and had the words " not to be taken " moulded in the glass. The patient felt doubtful whether a mistake had not been made and returned the same evening to the doctor who gave him an assurance that the medicine was all right. The patient was still not satisfied, and a day or two later he instructed his wife to take the bottle to the clerk of the Insurance Committee, who suggested that she should take it to a local chemist. The latter, discovering that the liquid in the bottle consisted partly of turpentine, gave certain advice to the patient's wife, who thereupon took the bottle back to the Insurance Committee clerk in whose custody (except during a subsequent analysis) it remained until the date of the inquiry. The patient did not, in fact, take any of the contents of the bottle. An analysis showed that about 80 per cent. of the liquid consisted of an aqueous infusion of gentian and about 20 per cent. of turpentine containing resin in solution. The two liquids would not mix, although upon being shaken the turpentine would for a short time take the form of an emulsion in the other liquid. From the medical point of view, the Inquiry Committee state, such a mixture was not suitable for dyspepsia or for any ordinary complaint of the kind from which the patient was apparently suffering.

2. About ten days later the patient, feeling dissatisfied, called on the doctor and requested him to sign a form of transfer to the list of another insurance doctor. The doctor asked for a fee of 6*d*. for the signing of the form ; the patient, not having money with him, did not pay the fee demanded and the transfer form was not signed.

3. G. H., another insured person on the doctor's list, was taken ill with pleurisy and pneumonia. The doctor called to see him on a Thursday and conducted a somewhat cursory examination. The patient's wife sent for the doctor to call on the Friday and herself went to see the doctor on the Saturday, informing him that her husband was seriously ill and raving. The doctor did not call to see the patient on either of these days but promised to send some medicine on the Saturday. The medicine was not sent. A message was sent to the doctor to call on the Sunday ; he could not call on that day because he was himself ill and in bed.

Dr. I. J., another local insurance doctor, was therefore called in on Sunday and attended the patient ; he found that the patient had been suffering from pneumonia, but that his condition was then improving. The patient's own doctor called to see him on the next day, Monday, but the patient's wife refused to allow him to see her husband, informing him that Dr. I. J. was then in charge of the case.

The Inquiry Committee found the following inferences of fact :—

(1) In the case of E. F. the doctor failed to give adequate medical treatment. His actions were criticised under three heads : (*a*) he supplied medicine to a patient whom he knew to be an insured person, for a case that was not one of emergency and at a time when chemists' shops were open and a prescription could have been dispensed ; (*b*) he supplied medicine to be taken in a " poison " bottle ; (*c*) he included turpentine in the mixture which rendered it unsuitable for internal use. The latter two acts, although apparently lacking a deliberate wrong intention, can be attributed only to carelessness for which it is difficult to account. The Inquiry Committee felt bound to draw the inference that the doctor was on this particular occasion not in a fit mental condition to deal with patients at all. In the absence of evidence they did not suggest possible causes for this condition.

(2) The Inquiry Committee considered the doctor's action in demanding a fee for signing the form of transfer was contrary to the spirit of the terms of service ; they were unable to find that the charging of a fee for such a service was definitely prohibited by the Regulations.[1]

(3) The doctor was negligent in not calling to see G. H. on the two days subsequent to his first visit, as this patient was then seriously ill and should not have been left unattended.

The Inquiry Committee called special attention to the conduct of the doctor at the inquiry. Although every effort was made to point out to him the serious nature of the charges brought against him and to invite him to deal with them by the test of cross-examination and by adducing affirmative evidence in his favour, he did not seem capable of appreciating the nature of the inquiry or his position as respondent to these charges, and he did little to furnish any reply by way of defence.

Decision.—The Minister decided that the doctor's name should be removed from the Medical List and that he should pay the costs of the Insurance Committee to an amount not exceeding £20.

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[1] Since Jan. 1st, 1924, the insured person can change his doctor at any time and the transfer form is, therefore, not now in use.

BRITISH EMPIRE EXHIBITION, WEMBLEY:

ITS MEDICAL AND SANITARY ADMINISTRATION.

"This Exhibition . . . stands for the coördination of our scientific knowledge and a common effort to overcome disease . . . in many parts of the Empire."—H.M. THE KING.

III.

AN important factor in the success of a great undertaking such as a national exhibition is the provision of adequate medical and sanitary services; and at Wembley this is more important than it has been in the case of former exhibitions, owing to the enormous size of the undertaking, and to the fact that there is a very considerable permanent population in the Park largely unused to Western ideas of sanitation.

The medical and sanitary services at Wembley are in themselves well worth bringing forward as features of an all-British exhibition. One of the chief objects of the display at Wembley is to allow every profession and trade a chance of showing its recent march of progress to its lay brethren, and we have at Wembley an opportunity of exhibiting to the public how its health and well-being are cared for in a place where it probably least expects to find such an adjunct to their safety and convenience. The lack of such essential adjuncts in many places where large numbers of people congregate is a sign that those responsible for the management of exhibitions often forget the necessity for any such provision or, at the most, offer it grudgingly and insufficiently. The contrast that Wembley makes with the usual exhibition is in no respect more striking than in the care taken to supply adequate sanitation and medical aid. Both services are remarkably complete and well equipped, and if more descriptive information had been supplied to visitors a very valuable and important exhibit would have resulted—one which would have been highly instructive to many who have little idea what would happen if large crowds are collected together without any precaution being taken against the results of accident or the spread of sickness. Information along these lines may be good seed sown in the minds of many who will at some future time have the responsibility of making arrangements for the organisation of large congresses of all sorts.

The medical staff at the Exhibition consists of the following officers: General Guise-Moores, Director of Medical Services; Dr. C. E. Goddard, medical officer of health; Colonel D. Lawson and Dr. Marjorie Thompson, assistant medical officers.

We are indebted to the Director and the Medical Officer of Health for the information which follows upon the side of the Exhibition under their control.

At numerous places in the grounds, buildings, and amusement park there are first-aid cabinets each in telephonic communication with its affiliated ambulance station, of which there are three. The main station of these is near the south-west entrance to the grounds, and is equipped with 14 beds, eight for women and six for men. This station practically corresponds to a miniature army casualty clearing station, and is connected by telephone with two sub-stations, one of which is situated near the Hong-Kong pavilion and the other near the north entrance to the grounds. None of these posts or stations is marked on the map which is given in the official guide book, and so all are rather difficult to locate.

The motor ambulances are new and of the most modern construction, enabling the transport of the sick or injured to be undertaken with promptness and with all possible regard for the patient's plight. A serious case, which it is not possible to treat at once or continue to treat after first aid in the main ambulance station, is sent to the Willesden General Hospital, where 30 beds have been reserved for the Exhibition authorities. Natives from any of the colonial encampments will be treated at the Seamen's Hospital, Greenwich, where arrangements have been made for the inmates. There is no reason to fear that these extensive facilities for the treatment of sickness will have to be utilised, but it is excellent that the authorities of the Exhibition should not have fallen into the error so common in the past of having to improvise hurried treatment of the sick and measures for the prevention of the spread of disease in the presence of some serious emergency. This is due to the efforts of the Standing Committee held since last October, under the chairmanship of Major-General W. W. O. Beveridge, the Chief Medical Adviser to the Wembley Empire Exhibition and the head of the St. John Ambulance Association and of the Red Cross Society, with the medical officer of health. It should be mentioned here that the St. John's Order and the Red Cross Society have generously provided most of the equipment and personnel, while the Exhibition authorities erected the main station and the north and east stations, and the cabinets.

The sanitary arrangements at Wembley have presented far greater difficulties to the practical sanitarians who have faced them than are suggested by the provision of 15 large lavatories in the grounds, and of several more in the Stadium. One of the most difficult aspects of the matter has been to induce the natives in the various encampments to follow the maxim of "When in Rome do as Rome does." For example, some of the native customs are not intended to be carried out in conjunction with a water-closet system, and tact has been necessary to overcome native prejudices. But the sanitation for a very large number of natives is now running smoothly on Western lines. The natives in addition have their special kitchens and two sanitary inspectors to see after the living quarters and the general sanitation; these inspectors are responsible to the sanitary officer, who in turn reports to the medical officer of health.

For the visitor the accommodation is ample and well fitted, and is supervised by one female and two male inspectors responsible to the sanitary officer. The whole of the drainage is on the water system and the surface drainage is by a separate conduit. To provide for the needs of the Exhibition the Wembley Park sewer had to be enlarged up to a diameter of 5 feet, and a sewage farm at Alperton has been constructed at a cost of £40,000, chiefly, though not exclusively, for the purposes of the Exhibition. Rubbish from the various buildings is placed in bins, which are emptied two or three times a day. It is then sifted and burnt by means of eight incinerators installed in the incinerator house on the south-east side of the Exhibition grounds. Food refuse from the many restaurants is collected between 11 P.M. and 6 A.M. by the Wembley Urban District Council and by them removed from the grounds and destroyed. The water-supply of the Exhibition is from the local mains as well as from a specially built reservoir in the grounds which holds over a million gallons.

A feature of the Exhibition, little advertised and extremely difficult to find, being unmarked on the map as well as being unknown to the guides, is the Welfare Hut or Children's Day Nursery. This most excellent institution is under the charge of Dr. Barry Lambert, director of the Central Council for Infant and Child Welfare, who is assisted by trained nurses and V.A.D. helpers, and also by a kindergarten teacher. The children are received and returned to their parents on a check system, and over 100 children can be taken at a time at a charge of sixpence for four hours. They are fed and looked after, either in the hut or in the surrounding garden, which, though small, is well suited to the purpose. The hut, which is most excellently fitted up, is bright, clean, and airy, and being of comparatively inexpensive build should form a model for similar institutions in many of our holiday resorts, where, during an all too short spell by the sea, mothers and young children often react upon each other to their mutual detriment.

The medical and allied services at Wembley are excellent, the buildings are lofty and not too overcrowded with exhibits, the amusements are nearly all in the open air, and the seating and lavatory accommodation is ample and well fitted. If the sun will only allow the roads and paths to dry and the gardens to flourish Londoners in particular and visitors in general should be able to obtain many hours of healthy pleasure amid agreeable surroundings.

A HEALTH BILL FOR THE IRISH FREE STATE.

(FROM OUR OWN CORRESPONDENT.)

IT is expected that the Committee of Inquiry into National Health Insurance and the public medical services of Ireland generally, promised at the beginning of the year, will shortly be set up. As its terms of reference are said to be comprehensive, it was thought that no health measure would be introduced until the committee had submitted its report, but last week the Minister of Local Government and Public Health introduced a Bill which touches on several important matters concerning health. Its main provisions are two: (1) The abolition of rural district councils and the transference of their functions to the county councils; (2) the appointment for each county of a whole-time medical officer of health. These changes will be very beneficial, if they come into effect, from the point of view of health. The rural district is too small to form a convenient administrative area, and the members of its council were often too susceptible to local influences to be efficient. The appointment of whole-time medical officers of health is a reform long overdue, and one which the medical profession has long been pressing.

In the present Bill the Minister has his duties as Minister of Health laid down for the first time: "It shall be the duty of the Minister in the exercise and performance of his powers and duties, to take all such steps as may be desirable to secure the preparation, effective carrying out, and coördination of measures conducive to the health of the people, including measures for (*a*) the prevention and cure of diseases, including the avoidance of fraud in connexion with alleged remedies therefor; (*b*) the treatment of physical and mental defects, including the treatment and care of the blind; (*c*) the initiation and direction of research, and the collection, preparation, publication, and dissemination of information and statistics relating thereto; (*d*) the training of persons for health services." The Minister also seeks power to establish consultative councils to give him advice and assistance in connexion with matters of health.

The Bill, in its general principles, is on sound lines and carries a step further the reforms suggested five years ago by the Irish Public Health Council. Ardent reformers will regret that the Minister has not ventured even further, but it may be that he did not wish to forestall the advice of the Committee of Inquiry. In matters of detail, no doubt, some improvements can be made. The conditions under which pensions can be obtained in compensation for loss of office are not as clear as they might be. It appears as if the grant of a pension were still to be an act of grace rather than a right. Again, a *consultative* council is just as much or as little use as the permanent officials wish; on the other hand, an *advisory* council, with power to initiate advice, can make its influence felt more effectively, and in a way more helpful to the Minister.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Ætiology of Death at Different Age-Periods.

IN a very interesting lecture on the principal causes of death at various age-periods Prof. Pirquet showed that in the life-cycle of humanity there are several well-marked periods in which certain conditions are liable to cause trouble. Thus, in earliest childhood disturbances of nutrition, infectious diseases, and neglect of general care are responsible for the majority of deaths. Whilst in China and India about 50 per cent. of all babies die in their first year, in the European northern countries the figure is brought down to less than 10 per cent. Of the infections tuberculosis is the chief source of danger to life. In the second year of life the organism is much more resistant. But here the acute infectious diseases—scarlet fever, measles, whooping cough, and diphtheria—are the worst "scavengers." At the time of puberty the organism changes its reaction towards this disease: the lung is most apt to harbour and respond to Koch's bacilli; girls in particular are prone to these attacks, and in them the so-called "galloping phthisis" has its maximum incidence between 15 and 20 years of age. The age-incidence in youths is between 18 and 24. The same age-period shows also a maximum of deaths due to a group of constitutional diseases, which have not yet been fully investigated—namely, articular acute rheumatism, chorea, and endocarditis. Appendicitis also has its "optimum" (*sic*) at the period of puberty. In places where sanitary conditions are at a low level the worst enemy of middle age is abdominal typhus; the best prophylaxis is an abundant supply of healthy water. In Vienna, for instance, the new water-supply opened in 1871 has caused the disappearance of typhus, formerly a most common disease here. The mortality due to the dangers of pregnancy and delivery and the puerperium is highest at 30 years. The age-period of 30–60, besides chronic tuberculosis, shows already the influence of the degenerative diseases. Diabetes and Graves's disease appear as ætiological factors, and organisms weakened by syphilitic infection succumb at this period to its effects. General paralysis of the insane is most frequent at the age of 40–45, aneurysm kills its victims between 50 and 55 years, tabes at about 55–60 years. The deadly action of alcohol and lues upon the liver is most marked at about 45–55. All these conditions attack chiefly the males, as also does pneumonia, which the senescent heart can no more overcome. The females, however, are less prone to this disease, for only half as many women as men die from it at that age (55–60); on the other hand, the female organism of that age begins to feel the effects of cancer of the sexual organs (maximum incidence between 50 and 55), and the venous circulatory system of females is more enfeebled, whilst in the males it is the arterial system that suffers first. After the sixtieth year, cancer of the mouth, the intestinal canal, the other abdominal organs, and the skin appear in the ætiology of death; males are liable to arteriosclerosis, emphysema, and angina pectoris: females to chronic rheumatism, embolism, and thrombosis. At the age of 80 the brain starts to "strike," a hæmorrhage may suffice; or the kidneys, the prostate, the lungs stop their service—a slight digestive trouble or bronchitis brings the end.

Serum Dosage.

In a symposium arranged by the "College of Doctors" of Vienna, Prof. Kraus, formerly of Buenos Aires, delivered a lecture on the technique and dosage of certain therapeutic agents, which were frequently the source of uncertainty to the practitioner. The following rule, worked out by Schick and Kassowitz, Prof. Kraus said, holds good: In mild cases of diphtheria, 100 units of antitoxin; in severe cases, 500 units per kilo body-weight. Subcutaneous injection for mild, intramuscular for severe or older cases is best. The intravenous route is only used in hypertoxic cases, and is fraught with danger. The concentrated sera are better than the others, as much less frequently do they give rise to after-troubles. Even ordinary horse serum may cause albuminuria, œdema, or exanthema. Antitetanic serum is to be used in the same way as antidiphtheritic serum; it is tested nowadays by the indirect method, and its dosage is on the same lines as above. It has been found that the mortality from tetanus can be kept low by the serum, but the effect is not so brilliant as in diphtheria. Its prophylactic value is beyond question, however. Behring advised the use of 20 to 200 units, and cases with a long incubation period show the best results. Every case where tetanus infection is suspected should be treated at once prophylactically. The value of polyvalent serum against dysentery, so often recommended, has no experimental foundation. Prof. Kraus urged the prophylactic use of diphtheria serum, a method not much in favour in Vienna. A serum prepared from cattle, not from horses, is used for this purpose, and its effects are very good for producing passive immunisation; it has hardly any undesirable after-effects, not even after re-injection. As regards anaphylaxis and "serum disease," the two conditions are not identical, but conditions similar to the first-named are caused by intravenous injections of serum. Altogether, the methods are so much used and known all over the world that one should never hesitate to utilise them in prophylactic work.

Death of Prof. R. Paltauf.

Dr. Richard Paltauf, professor of pathological anatomy of the Vienna University, recently passed away at the age of 67, after a long illness. He was a pioneer of serology and micro-biology, and was an ardent adherent of Koch's methods. At an early stage of his career he made his name known by his researches on the diseases of rag-collectors, which he recognised as anthrax; on diphtheria, rhinoscleroma, and on pellagra. The pathological institute of the second largest Vienna hospital, which was put under his charge as chief when he was quite a young man, soon became the Mecca of all students of pathology. The Pasteur treatment of rabies attracted him greatly and he studied this subject in Paris, and on his return he decided to organise a similar institute in Vienna. His efforts resulted in the founding of the Austrian Institute for Prophylactic Vaccinations, which became a model for all other European centres of like nature. The production of antidiphtheritic serum in Vienna was organised by him on a large scale, when its effectivity was proved, and from this institute there emanated a long series of important papers dealing with the advances made by such researchers as Chvostek, Pirquet, Schick, Lipschütz, and Pribram. In a few years a huge serotherapeutic institute was erected, which again was the centre of attraction for all students. Important researches on the endocrine glands were made there by Biedl and Joannovics; and a number of other most important investigations pertaining to public health problems are all in a wide measure due to the zeal of this unique man. In 1903 he was appointed professor of general and experimental pathology, and published a series of papers on lympho-granulomatosis, on the liver in various conditions, and on leukæmia. His chief merit was the teaching of a staff of excellent research workers; he has actually founded a "school" of pathology. He was also an eminently patriotic man, whose soul was much depressed by the turn the political affairs took in our country; and the downfall of the empire, which he long ago predicted, left him utterly broken-hearted. His death leaves a serious gap in the phalanx of the teachers who coöperated in forming a Vienna School of medical knowledge.

CONGLETON WAR MEMORIAL HOSPITAL. — On May 22nd the Duke of York declared open the war memorial hospital built at Congleton at a cost of £13,000. It is opened free of debt and is constructed for 12 beds and four private wards.

Correspondence.

"Audi alteram partem."

WASTING DISEASES OF CHILDHOOD.

To the Editor of THE LANCET.

SIR,—I have read with considerable interest Dr. W. Cramer's letter in THE LANCET of May 17th, in which he suggests that in my second Goulstonian Lecture I have under-estimated the incidence of xerophthalmia in Great Britain, and over-estimated its incidence in Denmark, and that my observations "may give a wrong impression of the actual incidence of the disease and of the significance of this incidence."

My information on the incidence of xerophthalmia in Denmark was derived from the writings of Prof. C. E. Bloch of Copenhagen. In his last paper on this subject Prof. Bloch says: "Before and especially during the war, there were many cases of xerophthalmia. In a recent investigation undertaken for the Danish Ophthalmological Society by Olaf Blegvad, from 600 to 700 cases of xerophthalmia were found to have occurred between 1909 and 1920 among children, in a population of less than 3,000,000, and there were probably others."[1] The figures concerning the incidence of xerophthalmia in the Birmingham area were supplied to me by Mr. Beatson Hird, surgeon to the Birmingham and Midland Eye Hospital. The area from which the hospital draws its patients has a population of more than one half the population of Denmark, yet during the same years the number of cases seen averaged only one per year, whilst no cases were observed at the Children's Hospital.

At the time my lecture was given, Dr. Cramer's interesting address, in which he gives Dr. Marshall Findlay's experience of the occurrence of xerophthalmia (keratomalacia) in an industrial school, and its cure by giving cod-liver oil and swede juice, had not been published. Although all the cases observed in Birmingham during the period I have named were mild ones, I feel quite sure that Dr. Cramer is right when he states that mild forms of the disease may not always be recognised. His remarks on the significance of the occurrence of even a few cases of xerophthalmia are of great importance and I entirely agree with them; indeed, I hoped that I had made clear in my lectures the important part which vitamin-A deficiency may play in the wasting diseases of infancy.

I am, Sir, yours faithfully,
LEONARD G. PARSONS.

Birmingham, May 26th, 1924.

TOXIC EFFECTS OF LOCAL ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—Among the recommendations of a committee of the American Medical Association (see THE LANCET, May 17th, p. 1013) is the injunction "that cocaine paste should never be used," presumably because of its toxic effects. I do not know what exactly the committee means by "cocaine paste," but if it is the mixture that goes by that name in London, then I, for one, am at a loss to understand the downright condemnation. The paste, as we use it, consists of pure cocaine hydrochloride powder mixed with solution of adrenalin (1–1000) to the consistence of a mud or paste, and I have been employing it regularly five or six times a week for the last ten years as my mainstay in anæsthetising the nose, during the whole of which period I have not had one single case of cocaine poisoning, not even of the milder variety. This claim may seem surprising, and the surprise will not be lessened when I say that in the septum resection operation I habitually use as much as from 4 to 6 gr. of cocaine for each case. Not only so, but, when a general anæsthetic is being used for that operation, I apply the paste to the septum as a preliminary, and my anæsthetist friends can testify that that step is followed by no evils.

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[1] Amer. Jour. Dis. Children, 1924, xxvii., 139.

The secret of safety seems to lie in the judicious use of adrenalin. In making his application let the surgeon paint the mucosa first of all with pure adrenalin solution alone and undiluted, in order to induce the local anæmia that minimises absorption, and, at the same time, denudes and exposes the sensory nerve-endings. Then the cocaine-adrenalin paste may be safely applied. It may, I think, be laid down as a rule that cocaine, whether in powder or in solution, should never be employed without adrenalin. The paste is, we must remember, not suitable for all purposes. I have never ventured to use it in the pharynx for example.

I am, Sir, yours faithfully,
DAN MCKENZIE.

Wimpole-street, W., May 22nd, 1924.

THE LATE MR. WALTER THOMPSON.

To the Editor of THE LANCET.

SIR,—May I be allowed to write a few words in memory of the late Mr. Walter Thompson, whose death was noticed briefly in your columns last week? I was his house surgeon, and later as resident surgical officer came much into contact with his cases. His work at the General Infirmary at Leeds was an example for all, the quiet methodical way in which he carried on his duties resulting in a maximum of efficiency. His keen, kindly interest in his old in-patients—whose personal history he would often know—was the admiration of those with whom he came into contact. I remember an occasion when he undertook the removal of a gangrenous appendix in a boy who had scarlet fever, and could not be moved to a nursing home owing to his infectivity. Unfortunately, in addition, a nurse was not available at the time. The operation was performed in the bedroom of a lonely farmhouse, the patient's doctor assisted, whilst I administered the anæsthetic. Notwithstanding the difficulties the operation was conducted with a perfect technique and the case did well. It was allowed by all that he was a surgeon in the broad sense; besides being an efficient operator, he knew how to decide under what conditions to operate and when not to do so, with proper adjustment of his operating measures to the condition of his patient; to this may be attributed the fact that his mortality rate was minimal. His practical knowledge of anæsthetics was of considerable value. By his death I, like many of his house surgeons, have lost a friend.

I am, Sir, yours faithfully,
A. P. BERTWISTLE.

Appleby, Westmorland, May 23rd, 1924.

PYORRHŒA ALVEOLARIS.

To the Editor of THE LANCET.

SIR,—Your review [1] of the present position of dental and alveolar sepsis in regard to general disease prompts me to make a brief comment from the pathologist's point of view.

1. The reason why there is confusion on the question as to whether dental sepsis is a cause or effect of systemic infection is, I believe, because histological examination of the blood is so frequently omitted. In this respect, I am not using the term as synonymous with the mechanical count of the corpuscles. The histology of the blood cells is often a reliable guide in the determination of the degree of systemic septic infection and is of marked assistance in the treatment of the patient.

2. As regards vaccine-therapy, I do not believe that vaccines should be expected to have any marked effect by themselves on the condition of the mouth. In my experience, however, I am not infrequently called upon to prepare a vaccine for this sole purpose. I invariably decline.

3. Given oral sepsis and histological signs of systemic infection in the blood, if one prepares an autogenous vaccine—I do not use the stock variety—from the buccal or dental lesion only it is seldom of marked benefit in systemic infection. Formerly I used to adopt this course, but after considerable experience found the results often disappointing. For some three years I have investigated the stools also, and I have found that vaccines prepared from intestinal streptococci are of much greater benefit. In other words, though I would not for a moment under-rate the necessity for turning off the oral tap by dental surgery, it appears that the streptococci from that source exert their systemic effects when they grow, as they almost invariably do, in the intestine.

I have not found the cultural characteristics, including the tests for hæmolysis, of much value as a guide to pathogenicity. A far more useful procedure is to incubate the isolated organisms with successive dilutions of normal human serum and then plant out each dilution on plates of appropriate media. Generally speaking, the strains that resist human serum in high concentration are pathogenic and vice versa. Certainly vaccines from the serum-resisting strains are of much greater clinical value.

I am, Sir, yours faithfully,
A. KNYVETT GORDON, M.B., B.C., B.A. Camb.

Bedford-square, W.C., May 24th, 1924.

TARTAR EMETIC IN BILHARZIASIS.

To the Editor of THE LANCET.

SIR,—May I draw your attention to the inaccuracy of the footnote on p. 1071? I was the first to use tartar emetic in bilharziasis, and mention is made thereof in "The Biology and Treatment of Venereal Diseases," published in 1915. Furthermore, you were good enough to draw attention to this in your columns when Dr. Christopherson published his original papers on the subject.—I am, Sir, yours faithfully,

J. E. R. MCDONAGH.

Wimpole-street, W., May 23rd, 1924.

HERPES AND VARICELLA: THEIR ÆTIOLOGICAL RELATIONSHIP.

To the Editor of THE LANCET.

SIR,—The relationship of herpes zoster to varicella is a much debated question, but in the outbreak of the latter disease to be described there seemed to be no other source of infection than contact with a case of herpes zoster. The eight children attacked had all been in a diphtheria ward of the South-Western Hospital for periods varying from 21 to 74 days. With the possible exception of the last case, who had only been in hospital 21 days, they can therefore hardly have contracted the disease before admission. A case of varicella had occurred in the ward concerned on Feb. 14th. It was promptly removed, and no further cases resulted from it, and as none of the children attacked later were in the ward at the time, they cannot have been infected by it. Other wards, under a different medical officer, in which varicella had occurred were taken out of quarantine on Feb. 24th, and there was no recognised case of varicella in the hospital after that date until May 2nd, when the outbreak about to be described occurred.

On April 17th, F. R., admitted to the ward in question on March 26th, developed typical herpes zoster, partly on the back and partly on the chest. He had a history of having had varicella some time before, and showed several good scars in confirmation. He had not been out of bed owing to his diphtheria, but was not isolated.

On May 2nd, E. C., who was admitted on March 25th from Queen Mary's Hospital, Carshalton, where he had been under treatment for tuberculous hip, and who was discharged back there on April 25th from the ward concerned, developed chicken-pox at Carshalton.

On May 3rd, H. G., admitted on March 29th to the same ward at the South-Western Hospital, and B. H., admitted on March 2nd, developed mild varicella. The latter is said to have had it before but no scars were detected. On May 4th two fresh cases occurred, one on the 5th, and two more on the 7th. Of the seven other children in the ward, five were said to have had chicken-pox, three of them showing excellent scars. The cases which make up the outbreak were all mild except two, which were moderately severe.

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[1] THE LANCET, May 24th, p. 1063.

If the first case, E. C., contracted the disease before admission to the South-Western Hospital, it must have had an incubation period of 38 days; if he contracted it after leaving the hospital, the incubation could not have been more than seven days, both unlikely periods. On the other hand, he developed it 15 days after contact with a case of herpes zoster. Of the two children who developed varicella at the South-Western Hospital on May 3rd, one had been in the ward 35 days, the other 62 days; the next two had been in 43 and 34 days respectively; the next one 54 days; while the two who developed it on May 7th had been in 74 and 21 days respectively. This last is the only one who could possibly have contracted it outside, and there is no history of exposure. The fact that all these children had been completely isolated in a fever hospital in which there had been no recognised case of varicella since Feb. 24th must be emphasised.

The only source of infection which suggests itself is the case of herpes zoster. It is noteworthy that this patient's previous attack of varicella did not protect him from herpes zoster, although he was only 3 years old. In the cases described by Dr. H. A. Cookson, in THE LANCET of May 3rd, the patients were all over 30. That these children could have contracted varicella before admission is impossible in view of their long residence in hospital before the disease appeared, while the fact that all the cases arose 15 to 20 days after the case of herpes zoster is most significant, since this coincides with the incubation period of varicella. In fact, everything points to the case of herpes zoster as the origin of the outbreak.

I am indebted to Dr. F. Foord Caiger for permission to publish this note.—I am, Sir, yours faithfully,

AMY M. THOMS, M.D. St.And., M.R.C.P. Lond.,
Assistant Medical Officer, South-Western
May 23rd, 1924. Hospital, Stockwell, S.W.

MEDICAL DEFENCE AND PROTECTION.

To the Editor of THE LANCET.

SIR,—The recent case of Harnett *v.* Bond and Adam has excited a considerable amount of interest in the minds of the general public, and has focused the attention of the members of the medical profession on some of the many problems that may arise in the course of their daily work, and more especially on the litigation in which any member of the profession may be involved as a result of the performance of his duties to his patients and to the community at large. It has also exposed to the lay mind a possibility of securing large damages for some alleged infraction of professional treatment or procedure. The anxieties of professional life are sufficient in themselves without the addition of those inseparable from litigious proceedings.

Dr. Adam was a member of the London and Counties Medical Protection Society, and thus the responsibility of defending him was undertaken by the Society after careful investigation of the case by the Council of the Society, and he was thus relieved of the pecuniary incubus. In view of the risks run by medical practitioners in their endeavour to discharge their duties as such, it is very remarkable that all members of the medical profession do not avail themselves of the services of one or other of the two societies that are responsible for the defence and protection of their interests. It is probable that less than one-half of the medical practitioners in the United Kingdom are included in the membership of the two Societies at the present time, and it would seem to us that it is highly desirable that all practitioners should without delay join one or other of the two Societies.

We are, Sir, yours faithfully,

JOHN ROSE BRADFORD,
C. M. FEGEN.
Victory House, Leicester-sq., W.C. 2, May 27th, 1924.

THE PSYCHOLOGY OF SEA-SICKNESS.

To the Editor of THE LANCET.

SIR,—I am much interested in the remarkable explanation given by Dr. W. H. B. Stoddart (THE LANCET, May 24th, p. 1081) of the psychological origin of sea-sickness. I wonder if he could tell me whether artificial feeding interferes with the "unconscious" and renders one immune. I am a remarkably good sailor and never feel the slightest qualm, nor does my small son. We were both brought up artificially. Or is there any other explanation of the fact that some people, like Captain Corcoran, are "never, never sick at sea"? I mean an explanation from the point of view of the psycho-analyst. Is it always the psyche that is the cause of the sicky feeling?

I enclose my card, and am, yours faithfully,

May 26th, 1924. F.R.C.S.

ROYAL MEDICAL BENEVOLENT FUND.

AT a meeting of the Case Committee held recently 54 cases were considered and £614 voted to 43 applicants. The following is a summary of the new cases relieved:—

Daughter, aged 55, of M.R.C.P. Irel., L.F.P.S. Glasg. who practised in Ireland and died in 1895. She is a nurse by profession, but her health broke down five years ago. The Nation's Fund for Nurses helped her for two years but cannot continue. This case was brought to the notice of the Fund by "The Gentlefolk's Help." Voted £5.

Daughter, aged 47, of M.B. who practised in London and died in 1879. Through illness unable to help her mother, who has a boarding house and who is placed in a position of great difficulty by unavoidable debt and expense of applicant's illness. The debts are due to unsuccessful summer season. Applicant's only income last year was £17 from miniature painting and £10 from Royal Academy Fund. Voted £15.

F.R.C.P. Edin., aged 72. Medical officer until March this year, when his health completely failed. Money received up to March £246, but this has now ceased. As the applicant is not allowed to deal with correspondence or business, his wife has placed this application in the hope that the Fund will be able to give some assistance. Voted £26 in 12 instalments.

Daughter, aged 48, of M.R.C.S. Eng. who practised in Somerset and died in 1904. She had to give up her post as governess to return home to help her mother. An invalid sister who lived in Russia is now only able to earn a little by her needle. The mother is in receipt of a Fund Annuity of £20, and a paying guest, who is leaving, pays £50 for partial board. The total income this year for four people will be £80, and rent and rates amount to £42. Voted £15 in two instalments.

Daughter, aged 31, of M.R.C.S. Eng. who practised in Wales and died in 1904. She is the eldest of four children; they were brought up by their mother, whose means were very slender. When applicant left school she obtained a post as secretary. In 1915 she obtained a clerkship in a bank, but contracted tuberculosis in 1920 and was in a sanatorium for six months. Influenza this year aggravated the old trouble, and she is now confined to her bed and entirely dependent upon her mother, whose only income is £50 per annum apart from the money received from letting, which just covers rent and rates. A sister lives at home to help with the house and a brother has only had work for three months and is thinking of joining the ranks as he is unable to find employment. Voted £10.

M.R.C.S., aged 59, married, one son aged 6. Practised in Durham. Entirely incapacitated by heart failure, and is being maintained and nursed by his wife, who is using her capital to pay all expenses and school fees. The wife has placed this application as her capital is reduced to about £25, and it is a great anxiety to her and her husband. Voted £26 in two instalments.

Daughter, aged 50, of M.R.C.S. Eng. who practised in London and died in 1911. Since 1903 applicant has had to make her own way and also look after a younger brother and sister. She has supported herself by secretarial work, which is now hard to get, and she has sold her piano and all things of any value to maintain herself. She is now trying to make a fresh start, and a friend has paid a deposit on a small bungalow, taking out a mortgage in the applicant's name. She hopes the Fund will be able to give her some help, as she only received £25 from secretarial work the last 12 months, supplemented by needlework and upholstery. Voted £10.

M.R.C.S., aged 69, married. Through ill-health caused by malaria and partial loss of memory he requires attendance and constant attention. His wife was in a mental home, but has been removed to the infirmary, and is now unable to provide the 30*s.* required for her husband's maintenance. The Fund is asked to make some grant towards his expenses. Voted £26 in 12 instalments.

Daughter, aged 51, of M.D. who practised in India. Her only income is from an Indian source (£40), and she supplements this by secretarial work, which last year amounted to only £39. Her rent is 16*s.* 6*d.* per week. Applicant has a chance of work but has not a typewriter, and she asks the Fund for a grant towards a machine. The Guild joined the Fund and a grant was made of £15.

Subscriptions may be sent to the hon. treasurer, Sir Charters Symonds, K.B.E., C.B., M.S., at 11, Chandos-street, Cavendish-square, London, W. 1.

THE GENERAL MEDICAL COUNCIL:

PRESIDENT'S ADDRESS.

THE summer session of the General Medical Council was opened on May 27th, when Sir DONALD MACALISTER, the President, began by calling attention to the pleasant fact that the membership of the Council had remained unbroken since the last May session. Three former members of the Council had, however, passed away during the recess: Sir Lambert Ormsby, the eminent Dublin surgeon, who retired after a year of office in 1915; Dr. Johnson Symington, one of our great anatomists, who represented the Queen's University of Belfast from 1916 to 1919; and Dr. Henry Arthur Latimer, a Direct Representative of the practitioners of England and Wales for 13 years (1907 to 1919), who was highly esteemed both in civic and in professional life.

The Position of the Irish Free State.

The President reminded the Council of the important effects upon its membership and responsibilities exerted by recent legislation following on the establishment of the Irish Free State. "These effects," he said, "have not always been clearly foreseen by the authorities concerned, and the precise bearing of the new enactments on the provisions of the Medical and Dentists Acts is even now not easily ascertainable. We are endeavouring to obtain authoritative legal advice on the subject, and this advice I propose, with the approval of the Executive Committee, to lay before the Council in camera for its careful consideration. Meanwhile it may suffice to say that, 'unless the Government of the Irish Free State should formally communicate to His Majesty's Government their desire for the continuance' of the existing system, references direct or indirect to 'Ireland' in the Medical and Dentists Acts must henceforth be read as references to 'Northern Ireland' only. In other words, the direct relations and responsibilities of 'the General Council of Medical Education and Registration of the United Kingdom' will in future be restricted to Great Britain and Northern Ireland. The universities and medical corporations and the medical practitioners of Southern Ireland will no longer be entitled to representation on the Council. The medical qualifications granted by licensing bodies in the Irish Free State will no longer entitle the holders to be registered in the British Register; and so far as I am aware no provision has been made for the establishment of an Irish Council or an Irish Register. Some of these results cannot but be disadvantageous not only to the public health, but also to medical education and to the medical profession in Southern Ireland. A temporary continuance of existing conditions, pending the enactment of local legislation, would seem to afford at least an interim solution of the difficulty, and would offer no obstacle to the introduction by the Free State Government of a permanent measure for the regulation of medicine in Southern Ireland. We are, however, advised that, whatever changes the operation of the recent enactments may bring about, we have grounds for thinking that the present members from Ireland may sit on the Council till the expiry of the terms for which they have respectively been appointed."

Overseas and Medical Reciprocity.

The President stated that the Executive Committee had procured the adhesion of six Canadian Provinces to resolutions as to registration, bringing nearer the establishment of complete reciprocity with the Dominion. From Colonel Needham, the Official Inspector of Indian Universities and Colleges of Medicine, there had also been received a series of reports on the conditions under which registrable degrees are being conferred in India. Sir Donald MacAlister expressed his hope that the good work being done by Colonel Needham would be continued. The Executive Committee, he said, had also reported that its representations made through our Ambassador at Rome, the Foreign Office, and the Privy Council, as to the effect of recent Italian legislation upon reciprocity, are likely to have a satisfactory issue.

The London School of Hygiene.

The President announced that Sir Gilbert Barling, Dr. J. C. McVail, Sir E. Coey-Bigger, Dr. W. H. L. Duckworth, Prof. J. B. Leathes, and Sir Humphry Rolleston would act temporarily as members of a Court of Governors of the London School of Hygiene, founded with the aid of trustees of the Rockefeller Foundation and of the Government. The Executive Committee of the Council, he said, had at first considered it inexpedient that the Council should appoint its own members as Governors and thus assume responsibility for the direction of a school engaged in preparing candidates for examination in public health; but the appointments had now been made on the understanding that the charter granted to the London School of Hygiene may be shortly modified.

Statistics of the Medical Profession.

The Registrar reports that the number of new practitioners registered in 1923 was the highest on record—namely, 2482—including 244 in the Colonial and Foreign Lists. In 1918 the number of students registered was 2253; in 1919 the number rose to 3420. If we assume that of the 5673 students registered in these two years—the majority being men demobilised from the forces—some 3000 have now completed their course of medical study, it would appear that about 80 per cent. have now become qualified and registered. This corresponds very closely with the forecasts, based upon previous experience, which the Council supplied to the Government departments during the war. As after 1919 the number of new students rapidly fell, it is clear that for the next few years the numbers annually added to the Register will fall in proportion, and should soon reach the figure of 1200 or so, which was the average before the war. The comparatively small number of fresh students registered in 1923—namely, 545—is no doubt attributable to the fact that, under the new regulations of the Council, the student must now *postpone* his registration until, in addition to his Examination in General Education, he has also passed a recognised examination in Elementary Chemistry and Physics. The next year's figures will, without question, be considerably higher, and will represent more truly the actual numbers who are undergoing professional instruction for medical qualifications. The period of strain on the teaching resources of the medical schools and colleges is practically at an end. In the comparative calm which now prevails, the teaching institutions will have leisure to introduce the improvements in the medical curriculum which, with their assistance, the Council has laid down as necessary or desirable at the present time.

Finance.

Sir Donald MacAlister concluded with a word on finance. "The financial position of the Council," he said, "is improved by the large increment in the fees for registration. The accounts show that the aggregate income of the General Council and Branch Councils in 1923 exceeded the aggregate expenditure by £6177. This is the largest surplus yet recorded for any one year. As I have indicated, there are much leaner years to come; but the Council has, by reason of its economies, a sufficient reserve to face these years without misgiving, and to maintain its numerous activities for the well-being of the public and the profession in full efficiency."

Course of Business.

At the conclusion of the Presidential address the Council proceeded to the consideration in camera of a communication by the President on questions relating to the Irish Free State. Fourteen penal cases await the consideration of the Council during this session, and two cases referred from the Dental Board of the United Kingdom recommending erasure from the Register.

AN ART EXHIBITION BY MEDICAL MEN.

THERE has been opened this week at the Royal Society of Medicine a small exhibition of works of art executed by medical men. There are some 230 exhibits, comprising pictures in oil and water colour—these, as might be expected, form by far the bulk of the show, etchings, mezzotints, glass-prints, photographs—some of these are very good, and a few examples of sculpture and modelling. There are no purely medical subjects, no pathological diagrams, and no story pictures illustrating either professional devotion or family tragedy. There are almost no figure subjects, apart from the few contributions in plastic designing; the bulk of the display is made up of renderings of Nature, mostly in her sunny aspect.

The following is an alphabetical list of the exhibitors:—

Dr. H. G. Adamson.

Sir Harry Baldwin, Mr. E. A. Barton, Dr. Stanley Beale, Mr. Victor Bonney, Dr. R. J. M. Buchanan.

Mr. Herbert Charles, Dr. A. S. Cobbledick, Mr. E. Treacher Collins.

Dr. W. R. Dakin, Dr. F. G. Dawtrey Drewitt.

Mr. Arthur Edmunds, Dr. H. A. Ellis.

Dr. T. R. Glynn, Sir Rickman Godlee, Mr. H. H. Greenwood, Mr. H. B. Grimsdale.

Mr. J. Hall-Edwards, Dr. John Hay, Dr. Leonard Hill, Dr. Harold Hodgson, Mr. C. Thurstan Holland, Dr. A. F. Hurst, Mr. J. Hutchinson, Dr. T. B. Hyslop.

Sir William Lister, Dr. Cuthbert Lockyer.

Dr. J. Stewart Mackintosh, Dr. P. H. Manson-Bahr, Dr. Leonard Mark, Dr. A. H. Miller, Mr. E. Miller, Mr. J. Howard Mummery.

Mr. Humphrey Neame.

Dr. J. Porter Parkinson, Mr. G. L. Parsons, Dr. S. Vere Pearson, Mr. Joseph Pollard, Dr. R. J. Probyn-Williams.

Dr. M. B. Ray, Dr. Clive Riviere, Dr. H. Leslie Roberts, Dr. H. R. Roger-Smith, Mr. W. Rushton.

Dr. H. J. Shirley, Dr. Herbert Spencer, Mr. W. T. Holmes Spicer, Sir Squire Sprigge, Dr. Louis Starr, Mr. T. G. Stevens.

Mr. Michael A. Teale, Dr. E. Sabine Tait, Sir Charles Tomes, Mr. Fred. Turnbull, Dr. H. M. Turnbull, Mr. F. A. Tyrrell.

Mr. Kenneth Walker, Dr. William Wallace, Mr. H. M. Wharry.

No attempt is here made to estimate either the particular merits of any exhibit or the particular style and efficiency of any exhibitor, but the opinion can certainly be expressed that the average of accomplishment shown is high. This, perhaps, is not surprising, as the list just given includes the names of many who are well-known exponents of their art and of several whose work has been seen in important exhibitions.

The exhibition is being held in the buildings of the Royal Society of Medicine, in the Marcus Beck Library, and is open daily from 11 until 6 to Fellows and Members of the Society and those introduced by them. The movement has been made successful by the courtesy and interest of the President of the Society, Sir William Hale-White, by the energy of the hon. secretary, Dr. Cuthbert Lockyer, and especially by the wholehearted assistance, rendered as adjudicator and supervisor of the hanging, of Mr. Sydney Kendrick. Mr. Kendrick's advice and practical help have made the exhibition a success, and the feeling of medical men who are interested in artistic production is one of real gratitude to him for his coöperation.

KENT OPHTHALMIC HOSPITAL.—The second annual conference of the Weekly Subscribers' Fund of this hospital was held at Maidstone on May 24th. Delegates attended from all over the county, representing 47,000 subscribers. The secretary's report on the progress of the Fund was most encouraging. He stated that five years ago the income was £192, whilst last year it amounted to £7926—an increase of £699 over 1922. The miners from one large colliery had joined the Fund, and there was reason to hope that other collieries would follow suit. Every police force in the county was subscribing; a large number of post office staffs had joined; and 104 stations on the Southern Railway last year contributed £1566. Last year the number of cases seen by the surgeons at the hospital was 41,000, as compared with 778 in 1901—a notable increase.

Medical News.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on May 21st, Mr. H. J. Waring, the Vice-Chancellor, being in the chair, Dr. R. A. Young was appointed to represent the University at the Tenth Annual Conference of the National Association for the Prevention of Tuberculosis to be held in London in July next.—The Graham Legacy Committee reported that Mr. V. R. Khanolkar, who had been reappointed to the Graham Scholarship for a period of two years from April 1st, 1923, had resigned the scholarship on acceptance of the post of professor of pathology in the Grant Medical College, Bombay; and that, on the recommendation of the School Committee of University College Hospital Medical School, they had appointed Mr. Norman D. Ball, of the Hospital for Consumption, Brompton, to the scholarship for two years from April 29th, 1924. The value of the scholarship is in this case £300.

EPSOM COLLEGE: SPECIAL SCHOLARSHIPS.—The Council will shortly award the following special scholarships:

The Sir Walter Buchanan Entrance Scholarship.—The value is about £33 a year. The conditions fixed by the Founders of the scholarship are as follows: The Sir Walter Buchanan Scholarship is primarily intended for the sons of deceased or prematurely invalided officers of the Indian Medical Service, or, failing any such candidates, for the sons of legally qualified medical men of pure British parentage in necessitous circumstances, who have practised medicine for at least five years in India.

Leopold Salomons Entrance Scholarships.—The value of each is £50 a year, and the conditions are that candidates shall show an adequate standard of education for their age, and that their financial condition is such as to make it impossible or difficult to obtain an education at Epsom College without the help of the scholarship. Candidates must be the sons of legally qualified medical men.

St. Anne's Home Scholarship.—The value is at present £48 a year, and it will be given to a deserving and necessitous orphan daughter of a medical man who has been for not less than five years in independent practice in England or Wales.

Forms of application for any of these scholarships can be obtained from the secretary, Mr. J. Bernard Lamb, 49, Bedford-square, W.C. 1.

PROPOSED MEMORIAL TO THE LATE SIR WILLIAM MACEWEN.—A largely attended and representative meeting was held on Thursday, May 22nd, in the Hall of the Royal Faculty of Physicians and Surgeons, Glasgow, at which it was resolved to take steps to provide a suitable memorial to the life and work of the late Sir William Macewen. Dr. A. Freeland Fergus made a preliminary statement, referring to the movement, initiated shortly before his death, to obtain a portrait of the great surgeon. It was formally resolved thereafter to promote the collection of a fund to perpetuate his memory in a fitting manner, and a number of proposals were discussed, including the following: the obtaining of a bust, relief, mural medallion, &c.; the publication of a memorial volume, including particularly Sir William Macewen's earlier scientific papers; the establishment of a Macewen Lectureship or Oration. Eventually it was remitted to an executive committee to consider these and other proposals, with a view to bringing forward to a later meeting a completed scheme. The following were elected members of this executive committee: Dr. Freeland Fergus (chairman); Prof. T. K. Monro, Sir Hector C. Cameron, Sir John Reid, Mr. J. H. Pringle (vice-chairmen); Colonel J. A. Roxburgh, Dr. George A. Allan, Sir Archibald Craig, Prof. Graham Kerr, Prof. W. K. Hunter, Dr. J. N. Marshall, Mr. William Gray, Dr. J. G. McCutcheon; and Mr. Archibald Young (hon. secretary). At the conclusion of the meeting a number of subscriptions were intimated to the treasurer, Mr. James MacFarlane, LL.D., Wesleyan-street, Glasgow, who will receive and acknowledge further contributions.

EPIDEMIC ENCEPHALITIS.—The Ministry of Health states that the total cases of encephalitis lethargica (sometimes called epidemic encephalitis or, popularly, "sleepy sickness") notified in England and Wales during the week ended May 17th has been 286, to be compared with 291 for the week ended May 10th, and 262 for that ended May 3rd. Since the beginning of the year the number of notified cases has been 2473 (as compared with an annual average of 839 in the previous four years). Out of this total, 281 have occurred in London; the chief centres affected elsewhere being Manchester, Sheffield, Birmingham, and Bristol. In general, however, the cases have been widely scattered throughout different parts of the country. It is too soon to estimate the mortality caused, but on the deaths so far reported the mortality has varied in different cities from 12 to 21 per cent. of the notified cases. The present epidemic prevalence is similar to, though more extensive than, that of the corresponding period in 1921 when a total of 1155 cases was reported. Speaking generally, there are signs of decline in the districts mainly affected, but the spread of infection to new districts results in the maintenance of the total prevalence. The existence of the disease in this country and its chief characteristics were established and described fully in reports and memoranda issued by the Local Government Board in 1918 and by the Ministry of Health in 1922. A further memorandum, about to be issued, will embody the result of the extensive inquiries now being made by the medical staff of the Ministry in different centres during the present period of prevalence. As in previous years there is little evidence that the definitely recognised cases of the disease are responsible for spreading infection, the epidemic being presumably kept up by slight and unrecognised cases or by healthy carriers of the virus of the malady. No specific measures such as vaccines are at present available either for prevention or treatment. Researches on the nature of the virus and many other problems arising in connexion with encephalitis are being actively pursued under the direction of the Medical Research Council, and in numerous laboratories at home and abroad.

IN aid of the Hertfordshire Nursing Association an Elizabethan fête will be held at Hatfield House to-day (Friday), May 30th, and Saturday, May 31st, being opened at 2 P.M. each day.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—Further particulars of the tenth annual conference to be held in London on July 3rd and 4th (as announced in THE LANCET, March 29th, 1924, p. 678) have now been published by the Association, and may be obtained on application to the Secretary, at 20, Hanover-square, London, W. 1.

Messrs. John Bale, Sons and Danielsson, Ltd., Great Titchfield-street, W., announce for early publication the *Franco-British Medical Review*, a journal which will contain an equal number of English and French medical articles. The French articles will be translated into English, while the English articles will be translated into French, and be republished in French journals. The hope is to promote professional intercourse.

RESEARCH DEFENCE SOCIETY.—The annual general meeting of this society will be held on Friday, June 13th, at 3 P.M., 1, Wimpole-street, Cavendish-square, W., when the chair will be taken by Lord Knutsford. A satisfactory report will be submitted by the committee, and it is hoped there will be a good attendance. Dr. Andrew Balfour will demonstrate a film recently prepared by the Rockefeller Foundation, illustrating the natural history of malaria and the preventive methods against that disease. The meeting this time is being held, not at 11, Chandos-street, but at the house of the Royal Society of Medicine, where there is more room for a cinema.

PARIS: ACADEMY OF MEDICINE.—The weekly meeting on May 20th was devoted to the commemoration of the tercentenary of the birth of Thomas Sydenham. Dr. Doleris, who was in the chair, extended a cordial welcome to the three delegates from England: Dr. Sidney Phillips, treasurer of the Royal College of Physicians of London, Dr. J. A. Ryle, of the Royal Society of Medicine, and Dr. A. E. Russell, former secretary of the New Sydenham Society. Dr. Doleris emphasised the many bonds which unite medical men of England and France in common scientific interests, and spoke of the pride shared by both nations in such names as Charcot and Pasteur, Lister and Jenner. Prof. A. Chauffard, late president of the Academy of Medicine, then delivered an address on the life and work of Thomas Sydenham, an abstract of which will appear in a subsequent issue of THE LANCET.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—Arrangements have been made for post-graduate teaching in Glasgow during the summer months—June till October. The teaching facilities are in three forms: (*a*) A general medical and surgical whole-time course, which will be conducted in a number of the general and special hospitals during the last two weeks of August and the first two weeks of September. The course is arranged to include most of the subjects of interest to the general practitioner. (*b*) Certain special clinical courses, which have been arranged in several of the hospitals to suit the requirements of general practitioners who have not very much time to devote to hospital work, (*c*) Clinical assistantships in a number of the institutions taking part in the work of the Association, which are available during the summer months as well as at other times of the year. These clinical assistantships are limited in number, and have been designed to make provision for graduates who desire opportunities for the detailed study of one or other of the "specialties." Graduates may thus become attached to wards or out-patient departments, nominally as clinical assistants. As such they will work under the direct supervision of the physician or surgeon in charge, taking advantage of the facilities for intimate study of the cases, and carrying out such detailed investigations as may be directed. These clinical assistantships provide quite exceptional opportunities for those who are able to devote the necessary time to the work, and they should appeal more especially to young graduates who contemplate practising some special subject, and to practitioners from overseas who wish to become acquainted with the methods of diagnosis and treatment employed in the various branches of medicine, surgery, and the special subjects. Copies of the syllabus, with full details of the courses, may be obtained from the Secretary, Glasgow Post-Graduate Medical Association, The University, Glasgow.

BLACKBURN INFIRMARY EXTENSION.—Blackburn's war memorial consists of an extension of the Blackburn and East Lancashire Royal Infirmary and a Garden of Remembrance. The foundation-stone of the extension was laid on May 24th by Mrs. R. A. Yerburgh. Mrs. Yerburgh and her late husband have subscribed over £31,000 to the Blackburn Royal Infirmary, which sum includes £8000 given this week. The new wing, which cost about £100,000, will have ward pavilions for 90 beds, two operating theatres, and the necessary anæsthetising, sterilising, dressing, and other rooms.

DONATIONS AND BEQUESTS.—Under the will of the late Alderman Thomas Hunter, J.P., of Leamington and Rugby, the testator left £1200 to the Hospital of St. Cross, Rugby, for a Wilfred Hunter bed in memory of his late son, and £200 to the Royal Midland Counties Home for Incurables, Leamington Spa.—The late Mr. Christian Joseph Muller, of Reigate, left by will £500 to the Royal Hospital for Incurables, Putney, and £250 to the London Hospital and the London Homœopathic Hospital.—By will the late Mrs. Ellen Cohen, of Cleveland-terrace, Hyde Park, W., left £500 to the London Ophthalmic Hospital, £500 to the Samaritan Free Hospital for Women, £500 to the Alexandra Hospital for Children with Hip Diseases, and £250 to the Surgical Aid Society.—The following bequests have been made under the will of the late Mr. Sydney Larnach, of East Grinstead: £10,000 each to the Middlesex Hospital, to St. George's Hospital, to the London Hospital, to St. Bartholomew's Hospital, to St. Thomas's Hospital, to Guy's Hospital, to the National Institution for the Blind, and to Dr. Barnardo's Homes; £5000 to Lord Mayor Treloar's Cripples Hospital and College, Alton, Hants; and £5000 to the East Grinstead Cottage Hospital.—By the will of the late Alderman Sir John Charles Bell, of Stoke Poges, the testator left £500 to the Hospital Sunday Fund, £100 each to the City of London Maternity Hospital, the Royal Surgical Aid Society, the Royal London Ophthalmic Hospital, the Royal National Orthopædic Hospital, and the Lord Mayor Treloar's Cripples Home and College. On the decease of the survivor of his wife and daughter he left £40,000 for division equally between the Infant Orphan Asylum, Wanstead; the Royal British Orphan Schools, Slough; the Orphan Working School and Alexandra Orphanage, Haverstock Hill, N.W.; the British Home and Hospital for Incurables, Streatham; the Royal Hospital and Home for Incurables, Putney; St. Bartholomew's Hospital; the London Hospital; the Hospital for Consumption and Diseases of the Chest, Fulham-road, S.W.; and the Royal Northern Hospital. The ultimate residue he left, under certain conditions, one-half as the survivor of his wife and daughter may appoint, and one-half for division between the Metropolitan Hospital Sunday Fund, the King Edward VII. Hospital Fund, the Royal Hospital and Home for Incurables, Putney, and the British Home and Hospital for Incurables, Crown-lane, Streatham.—The late Mr. Albert F. Wenger, of Newcastle-under-Lyme, left £100 to the North Staffordshire Infirmary.

THE LANCET: SUBSCRIPTION RATES.

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Parliamentary Intelligence.

HOUSE OF LORDS.

THURSDAY, MAY 22ND.

Therapeutic Substances Bill.

THE Therapeutic Substances Bill was considered in Committee, the Earl of DONOUGHMORE, Chairman of Committees, in the chair.

Earl DE LA WARR moved in Subsection (2) of Clause 4 to leave out the word "and" after "General Medical Council" and to add the words, "and one member appointed by the Council of the Institute of Chemistry of Great Britain and Ireland." He explained that the addition of these words was necessary in consequence of the decision to include the Institute of Chemistry among the bodies represented on the Joint Committee which is to frame regulations under the Bill.

The Earl of ONSLOW asked why it had been suggested that the Institute of Chemistry should be added.

Earl DE LA WARR said that the Minister was advised that in view of the status of the Institute of Chemistry it was desirable that it should be included in the list. The Pharmaceutical Society was already included.

The amendment was agreed to.

Earl DE LA WARR moved an amendment to Clause 5 excluding from the operation of the Bill therapeutic substances intended to be used solely for veterinary purposes. This amendment, he said, had been agreed upon between the Ministers of Health and Agriculture.

The amendment was agreed to.

Earl DE LA WARR moved an amendment to Clause 5 providing that regulations made under the Bill should be laid before both Houses of Parliament as soon as may be after they were made.

The amendment was agreed to.

A further amendment was agreed to, the object of which was to place beyond doubt that it is an offence not merely to manufacture without a licence but also to manufacture elsewhere than on premises in respect of which a licence has been granted.

The Bill passed through Committee and was reported to the House.

HOUSE OF COMMONS.

WEDNESDAY, MAY 21ST.

Health Consultative Councils.

Mr. ROBERT RICHARDSON asked the Minister of Health whether the Consultative Councils, authorised by the Ministry of Health Act, to advise him upon matters relating to public health administration had ever been set up; if so, upon how many occasions had they met; and when was the last meeting.—Mr. WHEATLEY replied: The answer to the first part of the question is "Yes." Four Consultative Councils were set up for England and one for Wales, under Orders in Council made in 1919. The particulars asked for in the remainder of the question are as follows:—

Consultative Council on—	No. of meetings held.	Date of last meeting.
England:		
Medical and allied services ..	31	July 1st, 1921
National Health Insurance (Approved Societies' work) ..	34	March 14th, 1924
Local health administration ..	12	July 7th, 1921
General health questions ..	24	Dec. 7th, 1921
Wales:		
Welsh Consultative Council ..	15	March 18th, 1924

Compulsory Insurance by Motor Owners.

Mr. WALTER BAKER asked the Minister of Transport whether he was aware that in many cases the owners of motor-cars did not insure their cars nor themselves against third-party risks, with the result that, should an accident occur, the injured persons were unable to obtain compensation; and whether he would consider the desirability of insisting upon the compulsory insurance of all motor vehicles.—Mr. H. GOSLING replied: The question of compelling motorists to insure against accidents has been, and is still, under consideration. There are, however, practical and administrative difficulties in framing any satisfactory scheme. Legislation would be required before any such scheme could be put into operation.

Government's Housing Bill.

SIR KINGSLEY WOOD asked the Minister of Health whether he proposed to introduce a Housing Bill or make any statement on the Government's housing proposals before the Whitsuntide recess.—Mr. WHEATLEY replied: While giving no pledge on the matter, I may say that I hope to be able to introduce the Bill before the Whitsuntide recess.

Relief for Blind Poor.

Sir ROBERT ASKE asked the Prime Minister whether the Government had framed any scheme which would relieve the blind poor from being dependent on Poor-law relief.—Mr. WHEATLEY replied: No scheme has been formed for relieving Poor-law authorities of their obligation to provide relief for destitute blind persons as for other destitute persons, but every effort is made under the Blind Persons Act to prevent blind persons from becoming dependent on Poor-law relief.

Hospitals for Early Mental Cases.

Mr. COSTELLO asked the Minister of Health whether, in view of the fact that borough councils were at present empowered by the Public Health Act, 1875, to establish and maintain hospitals for any class of illness, he would consider the advisability of allocating to the health committees of local authorities grants sufficient for the provision, where desired, of hospitals for uncertifiable cases of nervous breakdown to promote their restoration to self-supporting life while avoiding the stigma associated with institutions under the control of the lunacy authorities.—Mr. WHEATLEY replied: The terms of reference to the Royal Commission will include the question of the best method of providing for the treatment of mental disorder in the incipient stage; and pending the recommendations of the Commission—which I hope will be appointed within the next few weeks—I am not prepared to introduce legislation on the subject.

Service Patients in Asylums.

Mr. COSTELLO asked the Minister of Health the total number of Service patients at present in asylums; what occupational interests were afforded them; whether any remuneration is given for extra work voluntarily undertaken by them; whether the Brabazon scheme was in operation in any asylum; and how many Service patients were discharged from asylums during the year 1923.—Mr. WHEATLEY replied: The total number of "Service" patients in county and borough mental hospitals in England and Wales on Jan. 1st, 1924, was 4623. Newspapers, books, games, &c., are provided for recreation and amusement, and such patients as are fit for it are given employment out-of-doors on the farm and gardens, and indoors in the wards and workshops. It is the practice in most mental hospitals to reward patients so employed. I am not aware that the Brabazon scheme is in operation in any county and borough mental hospital. The number of "Service" patients discharged from county and borough mental hospitals in England and Wales during the year 1923 was 217.

National Insurance Contributions.

Sir JOHN MARRIOTT asked the Chancellor of the Exchequer the amount contributed by the employers and workmen, respectively, to the National Health Insurance and to the Unemployment Insurance Fund for the year ending March 31st, 1924, or the latest appropriate date.—Mr. W. GRAHAM (Financial Secretary to the Treasury) replied: The estimated figures are:—National Health Insurance, year to Dec. 31st, 1923: Employers' contributions, £13,700,000; employees' contributions, £12,300,000. Unemployment Insurance, year to March 31st, 1924: Employers' contributions, £18,430,000; employees' contributions, £16,590,000.

THURSDAY, MAY 22ND.

Alleged Instructions to Medical Boards.

Lieut.-Colonel WOODWARK asked the Minister of Pensions whether instructions were, or had been, given to the medical officers of the Ministry of Pensions at hospitals or on boards to consider and, wherever possible, to lower the pensions of pensioners.—Mr. F. O. ROBERTS replied: No, Sir. No such instruction has been issued by my department. Perhaps I may be allowed to add that in more than 25 per cent. of all the cases examined during the past four months the assessment for pension purposes has actually been *increased*.

Medical Examination of Policemen.

Mr. HORE-BELISHA asked the Home Secretary whether he would institute a system whereby, after a constable had been medically examined by a medical practitioner for the purpose of deciding whether he was physically capable of discharging police duties, he should be informed in writing that if he wished to appeal on medical grounds against the decision of the medical practitioner he had the right to lodge an appeal within 14 days; whether all medical practitioners could be instructed to take the constable's service into account and the consequent natural deterioration of his physical powers in their medical findings; and whether, in all cases before a constable was dismissed upon the grounds of ill-health, the question of his dismissal could be considered in relation to his pension rights and efforts be made to give him a lighter form of employment in order that he might complete his time for pension.—Mr. Henderson replied: As regards the first part of the question, the suggested notice in each individual case would appear unnecessary if, as I presume, the police are generally aware of the existence of the appeal procedure. I will, however, take steps to make sure that this procedure has duly been brought to the notice of the members of all forces. As regards the second part, the question the medical practitioner has to consider is whether the constable is or is not incapacitated by infirmity for further police duty, and whether such incapacity is likely to be permanent; and the length of the constable's service may or may not be relevant thereto. The question raised in the third part must be left to the police authorities to decide.

Blind Persons and Health Insurance.

Sir Charles Barrie asked the Minister of Pensions if he was aware that, under the National Health Insurance Act, should a person become incapacitated, but nevertheless be able to do light work, he was unable to draw any weekly allowance on account of performing light duties, and that this had been applied to people who were incapacitated by blindness; and would he introduce legislation to remove this disability in such cases.—Mr. Greenwood (Parliamentary Secretary to the Ministry of Health) replied: An insured person who has, through blindness or any other cause, been rendered permanently incapable of following what was formerly his normal occupation is not entitled to continue to receive sickness or disablement benefit under the National Health Insurance Acts after he has become capable of following some other remunerative occupation which is reasonably open to him, either at once or as the result of a course of training. My right hon. friend does not think it desirable to introduce legislation to enable benefit to be paid to persons who are undertaking remunerative work.

Advisory Committees on War Pensions.

Mr. Ernest Brown asked the Minister of Pensions the composition of the newly proposed advisory committees on war pensions.—Mr. F. O. Roberts replied: The scheme for the constitution and procedure of the new advisory councils is at present in draft and is the subject-matter of discussion at the series of Conferences which I am holding, in certain important centres, with representatives of war pensions committees. I may say, however, that it is intended that the new councils shall include one representative appointed on the nomination of each war pensions committee in the area covered by the council, together with direct representatives of disabled ex-Service men, widows, and dependents.

Friday, May 23rd.

Welfare of Blind Persons.

Mr. T. Henderson moved the second reading of a Bill to amend the Blind Persons Act, 1920. It proposed, he said, that every blind person who had attained the age of 30 should be entitled to receive and continue to receive such pension as under the Old Age Pensions Act he would be entitled to receive if he were 70 years of age. The present pension age was 50. County councils and county borough councils were to make arrangements to the satisfaction of the Ministry of Health for promoting the welfare of blind persons ordinarily resident within their area by providing and maintaining workshops and hostels and homes for them. Those employed in the workshops were to be paid remuneration not less than the average standard rate received by unskilled labourers in the district. The number of blind persons in England and Wales from one year upwards was 36,578. Those trained and employed were 8239; those under training were only 1246; and those unemployed who were between the ages of 30 and 70 numbered 20,759.

Mr. F. Martin, the blind Liberal Member for East Aberdeen, who was received with loud cheers, seconded the motion for the second reading.

After some discussion,

Mr. A. Greenwood (Parliamentary Secretary to the Ministry of Health) said that the Government attached very considerable importance to steps for the prevention of blindness. To that question the Minister of Health was now giving his attention. He was not prepared to say that the Government would accept the details of the Bill, although they were in sympathy with its objects. The Government would give their sympathetic consideration to the future of the measure.

The Bill was read a second time without a division.

Monday, May 26th.

Financial Grants to Hospitals.

Mr. Potts asked the Chancellor of the Exchequer whether, from his Budget surplus, he could make an additional grant of £1,000,000 to the hospitals of the country, having special regard to industrial centres where hospitals were in serious financial difficulties.—Mr. W. Graham (Financial Secretary to the Treasury) replied: The demands that have already been made on my right hon. friend's Budget surplus leaves him little scope for accepting fresh liabilities of this kind.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 17TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely, small-pox, 116; scarlet fever, 1500; diphtheria, 723; enteric fever, 95; pneumonia, 924; puerperal fever, 24; cerebro-spinal fever, 14; acute poliomyelitis, 7; acute polioencephalitis, 2; encephalitis lethargica, 286; continued fever, 2; dysentery, 4; ophthalmia neonatorum, 143. There were no cases of cholera, plague, or typhus fever notified during the week. The number of notified cases of encephalitis lethargica is practically the same as last week, the largest number of notifications coming from the counties of London, Durham, Gloucester, Lancaster, Middlesex, Northumberland, Stafford, Warwick, Yorkshire (West Riding), and others in smaller number. Of the cases of small-pox 63 were notified from the county of Derby (46 of these from Chesterfield), 13 from Northumberland (11 from Ashington), 12 from Nottingham (Hucknall and Basford each 5), Yorks, North Riding 13 (all from Middlesbrough).

Deaths.—In the aggregate of great towns the deaths from influenza fell further from 95 to 73. There were only 6 deaths in London from diphtheria, 23 from measles, and 5 from influenza.

The Services.

ROYAL ARMY MEDICAL CORPS.

OFFER OF COMMISSIONS.

Twenty or more Commissions in the Royal Army Medical Corps will be open for competition by examination on July 30th next. Applications for admission to the examination must be made to the Under Secretary of State, the War Office, Whitehall, London, S.W. 1, not later than July 20th, and the presence of candidates will be required in London from July 28th. Students who have entered for their final professional examinations in July may submit applications, which will be accepted subject to candidates qualifying and being registered before July 30th.

TERRITORIAL ARMY.

Capt. R. B. Smith resigns his commn. and retains the rank of Capt.

Supernumerary for Service with O.T.C.—Capt. (Local Maj.) C. H. Budd to be Maj.

ROYAL AIR FORCE.

Flight Lt. T. J. D. Atteridge is granted a permanent commission.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. V. E. H. Lindesay.

Medical Diary.

Information to be included in this column should reach u in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, June 5th.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Specimens:

Dr. H. Russell Andrews: Lipoma Ulcerating through the Vagina and Causing Severe Hæmorrhage in a Girl of 19.

Dr. J. S. Fairbairn }
Dr. J. Taylor } Simple Ovarian Embryoma with Spread into Contiguous Structures.

Paper:

Professor J. Munro Kerr
Dr. McIntyre
Dr. James Hendry
} Wounds of the Gravid and Non-Gravid Uterus—a Study of Uterine Scars.

(1) Professor Munro Kerr will discuss the subject from the clinical standpoint.

(2) Dr. McIntyre: Histological Studies of Various Uterine Scars.

(3) Dr. Hendry: Observations on the Uterine Scar after Conservative Cæsarean Section:—(*a*) When the Incision was made in the Active Contractile Portion of the Uterus. (*b*) When the Incision was made in the Lower Uterine Segment.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 2nd, to SATURDAY, June 7th.—CHELSEA HOSPITAL FOR WOMEN. Daily Operations, &c. Wed., 4 P.M., Mr. John Ellison: Minor Displacements. Fri., 2 P.M., Mr. J. B. Banister: Cervical Polyps.—LONDON SCHOOL OF TROPICAL MEDICINE. Tuesdays and Thursdays, 2 P.M., Demonstrations on Diseases of Tropical Countries.—MAUDSLEY HOSPITAL. Wed., 2.30 P.M., Dr. Mapother: Delusional States.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN. Clinical Demonstrations Daily (except Sats.) at 2 and 6 P.M.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, W. 1.

FRIDAY, June 6th.—9 P.M., Lord Rayleigh: The Glow of Phosphorus.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE.

MONDAY, June 2nd.—12 noon, Dr. Greenfield: Lecture, Cellular Reaction in Nervous System. 2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Aldren Turner: Clinical Lecture.

TUESDAY, June 3rd.—12 noon, Dr. Walshe: Lecture, Anatomy and Physiology of Nervous System. 2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: Compression Paraplegia.

THURSDAY, June 5th.—12 noon, Dr. Riddoch: Lecture, Anatomy and Physiology of the Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Lecture, Subjective Disorders of Sensibility.

FRIDAY, June 6th.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Mr. Sydney Scott: Lecture, Recent Studies on the Vestibular Nerve.

Applications should be addressed to the Secretary, Medical School, National Hospital for the Paralysed and Epileptic, Queen-square, London, W.C. 1.

J. G. GREENFIELD, Dean.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, June 2nd.—12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Mr. Bishop Harman: Eye Dept.

TUESDAY.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 2 P.M., Mr. Simmonds: Surgical Out-patients.

FRIDAY.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Dr. Burrell: Medical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M. In-patients, Out-patients, Operations, Special Departments.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, June 5th.—4 P.M., Dr. Paterson: Vomiting.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.

TUESDAY, June 3rd.—5 P.M., Dr. Bunch: Lupus.
THURSDAY.—5 P.M., Dr. M. G. Hannay: Lichen Planus.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

THURSDAY, June 5th.—5 P.M., Mr. Richard Lake: Middle-Ear Disease. (Geoffrey E. Duveen Lectures in Otology.)

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

MONDAY, June 2nd.—(At the Children's Hospital.) Mr. McMurray: Tubercular Arthritis.

TUESDAY.—(At the Southern Hospital.) Mr. O. H. Williams: Carcinoma of the Colon.

WEDNESDAY.—(At the Northern Hospital.) Dr. A. A. Gemmell: Ectopic Gestation.

THURSDAY.—(At the Stanley Hospital.) Mr. Courtenay Yorke: Ear, Nose, and Throat Cases.

FRIDAY.—(At the Royal Infirmary.) Mr. Thelwall Thomas: Treatment of Enlarged Prostate.

BRISTOL UNIVERSITY POST-GRADUATE DEMONSTRATIONS.

WEDNESDAY, June 4th.—(At the Hereford General Hospital). 3.30 P.M., Dr. J. O. Symes: Mental Deficiency and Feeble-mindedness in Children.

Appointments.

BUIST, J. J., M.B. Lond., has been appointed Teacher of Vaccination to the Welsh National School of Medicine.

DUNN, W. J., M.B., B.Ch. Belf., Dispensary Doctor of Donamena, Co. Tyrone.

EDGE, W., M.R.C.S., L.R.C.P. Lond., Resident Medical Superintendent at the Ladywell Sanatorium, Weaste.

MCCOLGAN, F. P., F.R.C.S. Irel., Medical Officer for the Laghey Dispensary District, Donegal.

MACDONALD, R., M.D. Edin., Medical Superintendent of the Coton Hill Mental Hospital, Stafford.

WHEELER, D. R., M.B., F.R.C.S. Eng. & Irel., Throat Surgeon, North Middlesex Hospital.

St. Thomas's Hospital: FISHER, J. H., M.B., B.S. Lond., F.R.C.S. Eng., Consulting Ophthalmic Surgeon; HUDSON, A. C., M.D., B.Ch., F.R.C.S. Eng., Ophthalmic Surgeon; DOYNE, P. G., M.B., B.Ch. Oxf., F.R.C.S. Eng., Ophthalmic Surgeon in Charge of Out-patients; DE WESSELOW, O. L. V. S., M.B., B.Ch. Oxf., F.R.C.P. Lond., Physician in Charge of Out-patients; LEYS, D. C., M.B. Oxf., M.R.C.P. Lond., Resident Assistant Physician; ROSS, D., M.B., B.Ch. Camb., Officer in Charge of Psycho-Therapeutic Dept.; FILDES, G., M.B., Ch.B. Manch., D.M.R. and E. Camb., Officer in Charge of X Rays Department: HOPE-SIMPSON, J. W., M.B., B.Ch. Camb., YATES, H., M.R.C.S., L.R.C.P. Lond., CREED, R. S., M.B., B.Ch. Oxf., BERRIDGE, W. C. M., M.R.C.S., L.R.C.P. Lond., JEFFERY, A. L. P., M.B., B.S. Lond., WALFORD, A. S. H., M.B., B.Ch. Camb., WEBB-PEPLOE, M. H., M.B., B.Ch. Camb,. and METCALFE, G. A., M.B., B.Ch. Camb., Casualty Officers and Anæsthetists; DYSON, A. D., M.R.C.S., L.R.C.P. Lond., MURRELL, E. B., M.R.C.S., L.R.C.P. Lond., COOPER, G. K., M.B., B.Ch. Camb., and PALMER, H. M., M.R.C.S., L.R.C.P. Lond., House Physicians; STORY, A. G., M.B., B.Ch. Camb., House Physician (for Children); LAUTRÉ, M. A., M.R.C.S., L.R.C.P. Lond., LUPTON, C. A., M.R.C.S., L.R.C.P. Lond., BRIGGS, T. F., M.R.C.S., L.R.C.P. Lond., and WILLIAMS, L. G., M.R.C.S., L.R.C.P. Lond., House Surgeons; ALLAN, F. G., M.R.C.S., L.R.C.P. Lond., Orthopædic House Surgeon; PEARCE, T. V., M.B., B.S. Lond., and JONES, B. H., M.R.C.S., L.R.C.P. Lond., House Surgeons for Throat and Ear respectively: CROCKFORD, A. L., M.B., B.Ch. Camb., Senior Obstetric House Physician; CHADWICK, S. A. R., M.R.C.S., L.R.C.P. Lond., Junior Obstetric House Physician; PENMAN, G. G., M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon; BATTSON, A. A., M.R.C.S., L.R.C.P. Lond., Junior Obstetric House Surgeon; CAVENAGH, J. B., M.B., B.Ch. Oxf., NEILSON, D. F. A., F.R.C.S. Eng., HUDSON, M. W. P., M.R.C.S., L.R.C.P. Lond., STARKEY, R. S., M.R.C.S., L.R.C.P. Lond., BARRON, H. T., M.D. Lond., FACEY, R. V., M.B., B.Ch. Oxf., NAUDE, A. L. te W., M.R.C.S., L.R.C.P. Lond., MARRINER, H. I., F.R.C.S. Edin., REES, E. J., M.R.C.S., L.R.C.P. Lond., SIMS, T. H., M.R.C.S., L.R.C.P. Lond., ALEXANDER, R. D., M.R.C.S., L.R.C.P. Lond., DARLINGTON, A. F. D., M.R.C.S., L.R.C.P. Lond., MORRIS, E. G., M.R.C.S., L.R.C.P. Lond., WEAVER-ADAMS, E. R., M.R.C.S., L.R.C.P. Lond., HALLIWELL, C. C., M.R.C.S., L.R.C.P. Lond., COOKE, A. M., M.B., B.Ch. Oxf., LANKESTER, A. L., M.R.C.S., L.R.C.P. Lond., MCLEAN, W. W., M.R.C.S., L.R.C.P. Lond., THORP, K. W., M.R.C.S., L.R.C.P. Lond., DOGGART, J. H., M.R.C.S., L.R.C.P. Lond., DAVIES, D. V., M.R.C.S., L.R.C.P. Lond., HOCHSCHILD, G., M.R.C.S., L.R.C.P. Lond., BRITO-MUTUNAYAGAM, M. A. B., M.R.C.S., L.R.C.P. Lond., and BAUWENS, P., M.R.C.S., L.R.C.P. Lond., Clinical Assistants.

Leicester Royal Infirmary: SLIGHT, J. D., M.D. Edin., Hon. Physician; CAIRNS, M.D. Edin., Asst. Hon. Physician.

Certifying Surgeons under the Factory and Workshop Acts: SUTHERLAND, W. D., M.B., Ch.B. Glasg. (Burghead District of Moray); MALCOLM, J., M.B., C.M. Aberd. (Kemnay, Aberdeen); CLOUSTON, E. C. T., M.R.C.S., L.R.C.P. Lond. (Lavenham); and JONES, J. H. (Kidwelly).

Vacancies.

For further information refer to the advertisement columns.

Barbados General Hospital.—Res. S. £330.

Barrow-in-Furness, North Lonsdale Hospital.—H.S. £225.

Bristol Maternity Hospital, Brunswick-square.—Visiting P. and two Asst. P's.

Bristol Royal Infirmary.—Hon. P. and Hon. Asst. P.

Bristol University.—Professorship of Medicine including Directorship of Clinical Studies.

Buxton, Devonshire Hospital.—Bacteriologist. £400.

Cairo, Egyptian Government School of Medicine.—Prof. of Biology. L.E.900–1140.

Chichester, Graylingwell Mental Hospital.—Second and Third Asst. M.O.'s. £350 and £300 respectively.

Guy's Hospital, S.E.—Director of Dept. for Venereal Dis. £500.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.P., H.S., Cas. M.O., and Cas. Surg. O. Each £100.

Holland County Council, Lincolnshire.—Asst. County M.O. £600.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each £50.

Huddersfield, Storthes Hall Asylum, Kirkburton.—Asst. M.O. £400.

Lancashire County Mental Hospital, Winwick, Warrington.—Locum Tenens M.O. 8 guineas weekly.

L.C.C. Mental Hospitals.—Seventh Asst. M.O.'s. £440.

London Hospital, E.—First Asst. to each of the four Medical Firms. £400.

London Hospital Medical College.—Jun. Demonstrator of Physiology.

London Lock Hospital, 91, Dean-street, S.W.—Clin. Assts.

London Temperance Hospital, Hampstead-road, N.W.—R.M.O. £200.

Middlesex Hospital, W.—Physn. to Dept. for Dis. of Nervous System.

Newcastle-upon-Tyne, Princess Mary Maternity Hospital, Jubilee-road, City-road.—Asst. R.M.O. £40.

Nottingham General Hospital.—H.P., H.S., also H.S. for Ear, Nose, and Throat Dept. Each £150.

Oldham Royal Infirmary.—Three H.S.'s. Each £200.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstet. S.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. P.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Dental S. £300.

Royal Army Medical Corps.—20 Commissions.

Royal Chest Hospital, City-road, E.C.—P.

Royal Northern Hospital, Holloway, N.—Anæsthetist. 10 guineas.

St. Albans, Herts Mental Hospital, Hill End.—Locum Tenens Asst. M.O. 7 guineas weekly.

St. Bartholomew's Hospital, E.C.—Radiologist.

St. Marylebone Hospital, Ladbroke-grove, W.—Third Asst. M.O. £300.

St. Pancras Hospital, King's-road, N.W.—Jun. Asst. M.O. £350.

Salford Royal Hospital.—Res. M.O. £175.

Sheffield Royal Infirmary.—Ophth. H.S., H.S., Asst. Cas. O., and H.S. to Ear, Throat, and Nose Dept. Each £60.

South London Hospital for Women, Clapham Common, S.W.—Asst. P.

Stirling District Mental Hospital, Larbert.—Third Asst. M.O. £250.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Sen. Res. M.O. £250.

War Memorial Hospital, Enfield, Middlesex.—Hon. Radiologist.

West Bromwich and District Hospital.—Res. H.S. £220.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., Res. Cas. O., and Med. Reg. Each £100.

Western Dispensary, 38, Rochester-row, Westminster, S.W.—Vacancy on Attending Medical Staff.

Births, Marriages, and Deaths.

BIRTHS.

CRANE.—On May 19th, at Bournemouth, the wife of Walter A. Crane, L.D.S., of a daughter.

RUSSELL.—On May 24th, at Southsea, the wife of Major G. Blakeley Russell, R.A.M.C. (retd.), Turret House, Portchester, of a daughter.

WALFORD.—On May 21st, at Wigmore-street, the wife of Dr. Alfred S. H. Walford, of a son.

WATSON.—On May 21st, at Cheltenham, the wife of Lt.-Col. C. H. Watson, D.S.O., I.M.S. (retd.), of a daughter.

MARRIAGES.

BLAKE—WRIGHT.—On May 22nd, at Christ Church, Westminster, Eliot Watson Blake, M.R.C.S., L.R.C.P., to Hilda Margery Wright, youngest daughter of the late Rev. Alban Wright, M.A., and the late Mrs. Wright, of Bedford.

LAIRD—SCOTT.—On May 20th, at St. Columba's, Pont-street, S.W., David Anderson Laird, F.R.C.S.E., of Southport, to Marion, youngest daughter of the late Rev. Adam and Mrs. Scott, of Sale and Southport.

SMART—EVANS.—On April 30th, 1924, at St. Peter's Church, Sible Hedingham, Arthur Herbert John Smart, M.B., B.Ch. Camb., to Amelia Olwen Mona Evans.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

LINKS WITH THE PAST.*

BY SIR J. KINGSTON FOWLER, K.C.V.O., C.M.G., M.D. CAMB.

[THE lecturer, after congratulating the Society on being the oldest hospital medical society in London and on having nevertheless retained the vigour of youth, discussed some of the links binding the Middlesex Hospital and King's College Hospital, referring especially to James Moncrieff Arnott and Dr. Thomas Watson.]

James Moncrieff Arnott was one of the founders of the medical school of the Middlesex Hospital and was for many years one of its surgeons. He was one of the original Fellows of the Royal College of Surgeons of England in 1843.

Sir Thomas Watson was a Tenth Wrangler and a Fellow of his College at Cambridge. He was physician to this hospital from 1827 to 1843, and in 1843 he published his "Lectures on the Principles and Practice of Physic," a book which 50 years ago was read by nearly all students.

Cardiology, Old and New.

It must have been chiefly in the wards of this hospital that Sir Thomas Watson acquired the clinical experience which enabled him to write those lectures, which were delivered partly at King's College and in part to the students of this hospital. I can claim a slender link with Sir Thomas Watson in that on Jan. 27th, 1888, I read a paper before the Clinical Society of London entitled a Case of Disease of the Aortic and Mitral Valves of 54 Years' Duration, originally under the Care of the late Sir Thomas Watson. It was that of a man aged 66, a wood turner, who in 1834, being then a boy aged 13, was admitted to this hospital with an attack of acute rheumatism, for which he remained under treatment for nine months and was readmitted with a relapse for a further period of six months. During 53 years he worked a treadle lathe as a wood turner, and had only been laid up on one occasion for a day or two with a slight cold. He had not experienced any shortness of breath on exertion. His family had not been usually long-lived or exceptionally vigorous. The physical signs indicated a moderate degree of narrowing of the aortic orifice, and that the aortic and mitral valves were incompetent. An enlarged area of præcordial dullness with well-marked systolic recession of the epigastrium and fifth and sixth interspaces suggested, but did not prove, that there were adhesions between the surfaces of the pericardium.

I stated in my paper that there could be little doubt that this was a case of valve disease of rheumatic origin, in which compensation had been established, had remained perfect for 54 years, and still showed no sign of failure. The symptoms of valvular disease depend upon failure of compensation; here there had been no failure, and consequently there had been no symptoms. The patient was admitted into the Middlesex Hospital under the care of my colleague, Dr. Sidney Coupland, on March 27th, and died on May 27th, 1888. At the autopsy the condition of the heart was shortly as follows: The surfaces of the pericardium were universally adherent. The heart weighed 20¼ oz. The left auricle and appendix were dilated, the edges of the mitral flap were much thickened; two of the chordæ contained calcareous deposits in their substance; the orifice was narrowed and the valve incompetent. The left ventricle was hypertrophied and dilated. The free margins of the aortic cusps were thickened, deformed, and contracted, so as to produce a slight narrowing of the orifice, and to permit of a moderate amount of regurgitation. There were numerous calcareous plates in the aorta. The kidneys were granular on the surface, and the cortex contained some cysts.

How faithful this patient was to the hospital. Brought to it as a boy, doubtless by his mother, he returned after the relapse, and again after an interval of 54 years of good health, and then for the last time to die within its walls. How typical of one of the most marked characteristics of the English race, an attachment to local institutions. This case has also an additional interest in that it proves, in contradiction to what we have heard somewhat often of late, that 37 years ago it was a matter of common knowledge amongst physicians that the prognosis in valvular disease of the heart did not depend upon the exact time of a murmur or upon the valve which was affected, but upon the condition of the muscular tissue of the heart, as evidenced by the capacity of the patient for physical exertion and upon the presence or absence of what is called "failure of compensation."

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* Abstracted from an address delivered on May 22nd to the Middlesex Hospital Medical Society on the occasion of the 150th anniversary of its foundation.

Early Theories on High Blood Pressure.

It is to my mind an easy transition from Sir Thomas Watson to Dr. (afterwards Sir) George Johnson, physician to King's College Hospital, whose memory I revere as my first master in medicine. Sir George Johnson was a master in the use of the stethoscope, and from him I learned the importance of diagnosis in clinical medicine. The public are but little interested in diagnosis, but great authorities on treatment. Yet it would appear at first sight that before the treatment of a patient is considered, a knowledge of the nature of his malady is not out of order. Sir George Johnson has a special claim upon those of you who are about to enter upon the practice of the profession, as you will enjoy an advantage denied to nearly all your predecessors in that you will find that most of your patients are suffering from the same ailment. It is hardly necessary to state that this is blood pressure. This great advantage you owe to Sir George Johnson.

In the preface to his last work he states that "the discovery of the structure and function of the arterioles and of the vaso-motor nervous system has thrown an entirely new light upon pathological subjects so entirely diverse and apparently disconnected as, amongst others, (1) Raynaud's disease; (2) the immediate cause of the arrested circulation and death from apnœa, badly named asphyxia; (3) the true nature and proximate cause of the collapse stage of cholera; and (4) the cause of hypertrophy of the left ventricle of the heart, which is so frequently associated with the contracted granular kidney. The connecting link between these diverse conditions is the 'stop-cock action' of the muscular-walled arterioles, the systemic arterioles being concerned in the first and fourth of the above-mentioned pathological conditions, and the pulmonary arterioles in the second and third."

The stop-cock function of the arterioles and the resulting high blood pressure in chronic Bright's disease are explained as follows: "In my endeavour to explain the cardiac hypertrophy it occurred to me that the impediment to the systemic circulation which calls for more forcible contraction, with resulting hypertrophy of the left ventricle, might be due to a persistent general contraction of the systemic arterioles, this contraction being excited by the abnormal quality of the blood. Then it seemed reasonable to infer that the long-continued over-action of the arterioles would result in hypertrophy of their muscular walls; and, guided by this line of reasoning, I was led to the discovery that the walls of the arterioles are hypertrophied, not only in the kidneys, where I first discovered and described it 17 years before, but also in the skin, the intestines, the voluntary muscles, and the pia mater."

In opposition to the views of Dr. Johnson, Sir William Gull and Dr. Sutton regarded the changes in the arterioles as due to a hyalin-fibroid change and not to hypertrophy of the muscular walls, the result of persistent contraction. This was then and has since been spoken of as arterio-capillary fibrosis, and is the condition present in what is now termed diffuse hyperplastic sclerosis.

The present view of this question, which was the subject of prolonged controversy, is somewhat as follows: Greater importance is attached to the changes in the intima than in the media, and the primary lesion is believed to be in the intima of the smaller and smallest arteries. The hypertrophy of the middle coat, which Dr. Johnson was the first to demonstrate, is admitted, and the changes in both coats is earlier and more marked in the kidney than elsewhere. The hypertrophy of the middle coat is regarded as a physiological response to the increased blood pressure. I do not find in the most recent literature of this subject a recognition of the fact that the hypertrophy of the left ventricle may be just as marked after death, in a case of acute scarlatinal nephritis of some months duration, as it is in chronic interstitial nephritis, and this I regard as the crux of the problem, for in such case there is no doubt as to the renal nature of the primary lesion. The clinical teaching of Dr. George Johnson remains in my judgment as sound to-day as it was 50 years ago.

[The lecturer then described briefly the services to the Society and to the medical school of Andrew Clark, President at the date of the centenary celebration, Alexander Patrick Stewart, Henry Thompson, Edward Headlam Greenhow, Robert Liveing, William Cayley, John Whitaker Hulke, George Lawson, David White Finlay, Thomas Henry Kellock, Robert Henry Lucas and Edward Ashby Fardon, John James Pringle, Robert Wishart Lyell and Charles Leopold Hudson, and Alfred Pearce Gould. He discussed the advances in medicine during the last 50 years, laying special stress on the treatment of acute rheumatism, the prevention and treatment of enteric fever, and the recognition and control of myxœdema. He discussed also the diminution in the use of alcohol in disease and proceeded finally to consider medical research.]

Research.

For the last 15 years it has been my good fortune as hon. secretary, a member of the advisory board, and a trustee of the Beit Fellowship for Medical Research, to have been in close contact with some of those who have taken part in the work of research. To have had such an opportunity, and yet to have come to no conclusions as to how the results which we all desire can best be achieved, would almost be deserving of censure, and I cannot plead such an excuse. When I see on the wall of the building which stands next to that in which we are now assembled, "The Bland-Sutton Institute of Pathology," I see therein embodied all the conclusions at which I long since arrived. To bring together young men imbued with that rare spirit of research and the ability which is so necessary for its prosecution in its highest forms, under a guiding mind who will point out the lines which should be followed, and help to overcome the obstacles which will almost constantly be met with, and to give the encouragement necessary when failure seems to be inevitable—that is my conception of the right way.

In such an atmosphere the work of one man unexpectedly throws light upon that of another, although the researches upon which they are severally engaged appear to be far as the poles asunder. Therein is acquired that knowledge of laboratory technique which is an essential preliminary to success in research, whereas its absence is an almost certain prelude to disaster. It is quite true that it would be possible to tell of many whose names in science are world-wide who did not enjoy the amenities which such an institute affords. The broken-down walls of the old Ecole Normale where Pasteur worked and Lister's Ward in Glasgow Infirmary were not models for future generations to copy, but the lack of many things which they and others needed only hindered their work, it did not help it forwards. They were able by their genius to triumph over the unnecessary difficulties by which they were surrounded.

It is possible that one of those to whom I am now speaking may, when our Society celebrates the completion of 200 years of honoured life, stand in my place and recall the great deeds of science which have marked the 50 years which will then have come to an end. And I do not doubt that he will be able to point to far greater triumphs than have this evening been recalled to your minds, for we are but on the threshold of that garner of knowledge which is called medical science. But let it never be forgotten that the art and practice of medicine in every age have to deal with human nature, which changes but slowly and will never rise above the need for sympathy and kindness in times of sickness, or when about to enter the realms of the eternal silence.

UNBREAKABLE SURGICAL NEEDLES.

Mr. Hamilton Bailey, F.R.C.S., writes: In every branch of operative surgery the breaking of needles has been a source of annoyance, delay, and even danger. I have had needles so tempered that they will not break even when subjected to a much greater stress than is probable in any surgical procedure. Other advantages of these needles are: (1) Being malleable, with two pairs of watchmaker's pliers or (but not so accurately) with Spencer Wells forceps, a needle may at any moment be fashioned to such a curvature as to meet a particular situation in hand; (2) by exerting moderate lateral pressure upon the threaded "eye"—the suture may be "locked" within the needle—thus eradicating another evil—the needle becoming unthreaded. It was Mr. Thelwall Thomas, of Liverpool, who first directed my attention to the possibilities of a needle or bodkin the centre of which had been rendered malleable by being held in a flame.

Messrs. P. Spencer and Sons, surgical needle manufacturers, of Redditch, are the makers.

"THE SHOT."[1]

THE medical interest of this book is not very profound and largely turns upon the question of whether a neurotic, whose character is well indicated in a few lines, was murdered, and, if so, by whom; or whether he shot himself. The solution of the mystery, which is well sustained to the end of a cleverly told story, would not wholly satisfy forensic medicine, but it is the logical termination of some complicated events which are well thought out and arranged coherently. The author has hit upon a new and good plot and has developed it well, writing clearly and forcibly, and getting and preserving a real atmosphere, but in future efforts she might be asked to keep guard over two things. The first is the perpetual use of the historic present, which has so much point when employed occasionally and is so irritating in continuous narrative; the second is, the little trick of asking the reader questions which are generally answered in the next line. The question and answer constitute statements which might as well be made directly. The pleasure given by the good sensational novel is now widely acknowledged by the most serious folk, and we recommend "The Shot" to our readers.

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[1] The Shot. By Sybil Creed. London: Chatto and Windus. 1924. Pp. 228.

HEALTH CONDITIONS IN SOMALILAND AND THE STRAITS SETTLEMENTS.

Somaliland.

A REPORT prepared by Mr. H. B. Kittermaster, Secretary to the Administration, states that in 1922 1252 cases were admitted to hospital and there were 17,696 out-patients. These were treated for scurvy 18, ulcers 4196, tuberculosis 167, malaria 115, relapsing fever 92, small-pox 10, influenza 164, dysentery 74, syphilis 844, and gonorrhœa 313. The health of the European population was good. Two officials were invalided, one for dysentery and the other for chronic dyspepsia.

Straits Settlements.

These Settlements, comprising Singapore, Penang, and Malacca, with the dependencies of The Dindings, Cocos-Keeling Islands, and Christmas Island, have a total area of about 1600 square miles. Labuan was incorporated in the Straits Settlements in 1907; its area is 28·6 square miles. The population of Singapore, according to the census of 1921, was 451,912, of Penang 304,335, and of Malacca 153.522. The number of births and deaths registered during the year was 27,723 and 27,804 respectively. In Singapore the deaths exceeded the number of births by 1158, whereas in Penang, Malacca, and Labuan the births were more than the deaths. The crude birth-rate was 30·59 per 1000, against 32·57 in 1921; the decrease probably results from the slump in trade and employment. The percentage of males born was 52, females 48. The highest birth-rate in any nationality was 37·71 per 1000, against 32·57 in 1921, in both years Malay. The lowest was among Indians, 21·43. The infantile mortality (deaths of children under 1 year) was 207·52 per 1000 births, an increase on the previous year when it was 190·69 per 1000. Malacca shows the highest figure, 1128 infantile deaths amongst 4992 births, or 225·9 per 1000; this emphasises the need for more trained Malay midwives. The number of deaths from infantile convulsions, mostly due to tetanus, was 3146, against 3742 in 1921. The crude death-rate was 30·68, against 31·79 per 1000 in 1921; this is the second lowest on record. The highest racial death-rate for the year was 32·15 amongst Chinese, the lowest 9·04 amongst Europeans. The deaths from pneumonia were 1068, against 1230, and from influenza 234, against 237 in the previous year; it is to be borne in mind that Europeans if sick for any length of time usually leave Malaya. Beri-beri accounted for 1388 deaths, as against 1229 and 1026 in 1921 and 1920 respectively. Malaria and tuberculosis were responsible for 3977 and 2966 deaths respectively, against 4703 and 3258 in 1921. Deaths from fever unclassified were 3043, against 2367 in the previous year. Dysentery caused 1085 deaths and diarrhœa 458, against 1090 and 263 in 1921. There were 45 deaths from cerebro-spinal fever, 39 from plague, 2 from cholera, and 80 from small-pox.

THE GARB OF THE PHYSICIAN.

A HISTORICAL study of the garb of the physician in France was written some time ago by Dr. Cabanès, of Paris, and this study has now been extended to include the physician in other lands, as illustrated by contemporary drawings and paintings. The description of English physicians in "Le costume du médecin à l'étranger"[1] was compiled with the aid of Sir Anthony Bowlby, Dr. J. D. Rolleston, and others. Holbein reproduced several types of doctors during his residence at the Court of Henry VIII., such as the famous Dr. John Chambers, in fur collared robe, physician-in-ordinary to the King. Hogarth portrayed the doctors of his time with irony. He dealt as severely with physicians as with judges, advocates, lawyers, or churchmen, fleshing his mordant wit in the quackery of the one profession as he did in the incompetence of the other and in the ignorance of all. His famous picture of "Doctors with their Walking Sticks" is a masterpiece of irony, although a little far-fetched. In this picture the physician is clad in a long robe buttoned down in front or with lapels, a square-crowned hat or a flattened velvet cap, sporting a wig with many curls, and carrying the inseparable knob-headed stick. The physician was thus hardly to be distinguished from the townsman of the day. The dress of doctors of France and abroad is an expression of the same principle which underlies a similar psychology.

AN EARLY OBSERVATION OF CAISSON DISEASE.

THE late Deputy Inspector-General Archibald McKinley, R.N., who died on May 17th at Southsea, was the first to demonstrate, in 1900, at a post-mortem examination, the pathology of caisson disease, which had hitherto been very obscure. The case as given in the "Health of the Navy" Blue-book, 1900, p. 102, is as follows:—

"A man went down in a diving dress to $24\frac{1}{2}$ fathoms, remained down 40 minutes, and came up in 20 minutes, slowly, and was quite all right for eight or nine minutes when he complained of pain in the stomach, and collapsed, became cyanosed, and died in six or seven minutes. In the choroid plexus there were bubbles of air in the vessels, giving a beaded appearance. The veins of heart and mesentery looked similar and air came in a puff from the right heart when opened. He (McKinley) suggested gas had been absorbed by blood under pressure of $4\frac{1}{2}$ atmospheres and afterwards escaped as from soda-water, causing death from air embolism."

Dr. McKinley received his medical training at the Royal College of Surgeons in Ireland, where he qualified as licentiate in 1872, and the following year obtained the L.R.C.P.I. and L.M.

WALKING FOR HEALTH.

Dr. A. H. Doty, in a recently published little book entitled "Walking for Health" (New York: D. Appleton and Company, 1923, pp. 44, 2*s.*), emphasises the necessity for those engaged in sedentary occupations of taking a walk of from one to five miles in the open air every day. He points out that the exercise of walking steadily has a beneficial effect upon the circulation and may reduce the liability to arterio-sclerosis. The book is pleasantly written in a popular style.

A NEW ACOUSTIC AID FOR THE DEAF.

THE "Aurolaid" pattern of electric acoustic aid for the deaf is made on the same principles as other electric aids and is a well-constructed piece of apparatus. This pattern consists of two identical, or twin, instruments, one of which can be worn on each ear, and the transmitters can be placed in a small leather attaché case provided with openings at the back to transmit the sound. The receivers are particularly small and neat, are provided with a vulcanite projection to fix into the meatus and with a flexible metal hook to pass around the auricle, thus avoiding the use of a head-spring. Each transmitter is double and, having a hinge between the two parts, can be bent to stand on a table. The apparatus is small and light, the twins weighing 15 oz., each, but not 7 oz. as stated by the makers. We have tried it on a few cases of severe middle-ear deafness, and have found it powerful and effective; but there is a considerable amount of adventitious noise, and a certain amount of distortion of the voice, which we hope that the ingenuity of this old-established firm will be able to overcome.

The apparatus can be obtained from the makers, Messrs. F. Charles Rein and Son, 30, Charing Cross-road, London, W.C. The price of six guineas is a reasonable one.

FRAUDULENT BEGGING FROM MEDICAL MEN.

A MAN named William Stanley Reeves, alias William Stanley Bennett, has been committed at Peterborough on a charge of obtaining a cheque and money from medical men on false pretences. His fraud was based on the false statements that he was a physical training instructor to a boys' club and that the particular doctor on whom he called had been elected president of the club: he then asked for a subscription to meet a deficiency of funds. The man is 32 years of age, is 5 feet $7\frac{1}{2}$ inches high, has dark-brown hair and a dark complexion, and it is stated that he has had previous convictions at St. Albans, Devonport, Plymouth, Warminster, and Woking. We understand that the Chief Constable of Peterborough would be glad if any person who has been defrauded will give particulars of their complaint to the Chief Constable's Office, Peterborough. Their attendance as witnesses would not be required.

THE NURSING OF SURGICAL TUBERCULOSIS.

THE great advance being made in the treatment of children suffering from surgical tuberculosis, which advance is both curative and educational, has necessitated highly specialised nursing. Miss Janet P. Robertson, matron of the Lord Mayor Treloar's Hospital and College at Alton, has made a valuable contribution in this direction in a small book entitled "The Nursing of Surgical Tuberculosis in Children" (London: Scientific Press, pp. 88, 3*s.*). The book includes an outline of the nursing of the common forms of surgical tuberculosis; valuable information with reference to splints, diet, and education; and useful chapters on plaster work and sun treatment. The good work achieved at Lord Mayor Treloar's Hospital, Alton, is now well known, and it is a privilege to have, in such concise form, information directly based on the experience of those who have contributed so substantially to the success of this work. The last chapter on administration is especially useful.

Corrigendum.—In Prof. A. V. Hill's lecture on the Function of Hæmoglobin in the Body (THE LANCET, May 17th, p. 994, col. 1, line 15) the word "hæmochromogen" should read "hæmatoporphyrin."

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[1] P. Longuet, 34, Rue Sedaine, Paris.

SOME
Fundamental Factors
CONCERNED IN THE
SPREAD OF INFECTIOUS DISEASE.

A Paper read at the Congress of the Royal Institute of Public Health, held in Bordeaux on June 4th.

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IT has been my fortune during the past decade to have had exceptional opportunities for studying disease outbreaks in ships and schools, both as a clinician and a laboratory worker. I have therefore chosen for my subject some of those factors which govern the constantly changing balance between man and the microbes that depend on him. The laws that control the character of an infectious disease and regulate its distribution in time and space are of paramount importance to all medical officers, or indeed to any one, who is employed in trying to conserve the public health. The time at my disposal forces me to be somewhat brief and dogmatic; and I shall only discuss one or two aspects of the subject which I have had especial opportunities of studying.

Some of the evidence, experimental and otherwise, which will be used to support the theories I wish to bring forward has not yet been published in detail, but I hope it soon will be.

MICROBIC DISSEMINATION AND DROPLET INFECTION.

All organisms must arrange for their dispersal in space and time, or else cease to exist. In fact, an adequate means of dissemination is one of the biological hall-marks of a successful species. In the case of the disease-producing microbes and other dependent organisms which inhabit man, dissemination means the infection of fresh human hosts, often as cases of or carriers of disease. A parasite which fails to arrange the transport of its offspring to another host commits race suicide.

I am only going to discuss here one important method of dissemination which is used by microbic parasites—that is, "droplet infection." Flügge, in 1897, first drew attention to the fact that microbes could be transported over short distances in small droplets expelled in talking, coughing, or sneezing. A study of the experimental work since done on this subject leads to the following conclusions. Infection by means of droplets generally only takes place at very short distances, in spite of the fact that microbes can travel over 30 feet from their source of origin by this method. But at such distances the infected droplets are in very low concentration. As one would expect, the smaller the room the higher the concentration of infective droplets that can be produced in the air, other conditions being the same. Within half an hour of being released into the air, the vast majority of droplets settle out of it by force of their own weight. My own experiments confirm the above observations, but there are one or two other important points about the mechanism of droplet infection which up to the present do not seem to have attracted very much notice. These points may perhaps be most easily grasped if I describe one or two experiments among some I have lately been doing. Probably the most important thing to realise about the dispersion of droplets is that there are two distinct mechanisms. The first one is well-illustrated by this experiment. Two Petri dishes of agar medium 6 inches in diameter were fixed vertically upright 1 foot and 4 feet away from the mouth of a subject who had previously rinsed his mouth out with a suspension of *Bacillus prodigiosus*. The Petri dishes were coughed at, and then immediately covered. After incubation the near plate produced 28 red colonies of the index organism, whereas no red colonies appeared on the other Petri dish, which had been 4 feet away from the cough. This experiment illustrates the propulsive effect of the cough how it soon expends itself, but is able to immediately distribute a heavy concentration of droplets to a distance of 1 foot but unable to throw them as far as 4 feet.

In the next experiment, under ordinary conditions of ventilation, some of the organisms which had been released at one end of a room 40 feet long were able to infect Petri dishes which had been left exposed for one or two minutes at the other end of the room. At the time of the experiment there was no obvious draught, the doors and windows were all shut, and only one small ventilator, which during the experiment was acting as an exhaust, remained open. This ventilator caused an imperceptible current of air down the room, and the infected droplets were borne on this air current to the exposed Petri dishes. Under similar conditions, if the bacilli were released in the centre of the room, and the plates placed at each end, only the plates at the ventilator end were infected. That is to say, the droplets only spread with the wind. With the ventilator shut, the air currents were apparently lighter and more variable in direction, because in this case the microbe-laden droplets spread in both directions, but much more slowly.

These experiments show the two distinct mechanisms in the dispersion of droplets by talking, coughing, or sneezing. First, the cough produced a jet which is projected almost instantaneously to a distance of a foot or two when the air resistance quickly stops it. This jet contains all the heavier drops of mucus or saliva, and sometimes even obvious lumps of phlegm. The heavier particles practically drop to the ground at once, but the lighter droplets can float on the prevailing air currents for as long as half an hour, and be carried to comparatively great distances. Once pointed out, the mechanism of droplet infection is seen to be merely a matter of common sense. Any smoker can easily demonstrate the mechanism of air-borne infection for himself—blow out a mouthful of smoke, the smoke proceeds as a dense jet for two or three feet, when it is brought up rather suddenly by the resistance of the air; a localised cloud is then formed, which diffuses slowly through the room floating in the prevailing air currents. This cloud of smoke becomes less and less dense the further it gets away from the source of its origin. The short-range jet of heavy droplets is the usual means by which so-called "contact" infection is acquired. The best example of the practical application of this principle is seen in the "bed-isolation" treatment of infectious diseases. Owing to the impossibility of throwing a heavy dose of infective material more than a few feet it is possible to nurse two or three different infectious diseases in the same ward without any appreciable danger from cross-infection, provided the beds are far enough apart. The lighter droplets, it is true, may be borne considerable distances in the convection and diffusion currents of air, but, as will be seen later, are in such low concentration that they rarely are able to supply a dangerous dose of infectious material. This, at least, is the case with many diseases and under ordinary conditions of ventilation.

It might be argued that the above observations do not apply to the actual distributors of pathogenic organisms—namely, real cases and carriers—because a very high concentration of a harmless germ, *Bacillus prodigiosus*, was used as an index organism. However, bacteria-laden droplets are real things and can be actually caught and examined directly. Microscopic glass slides, if coughed at and stained, will show droplets of many sizes, containing leucocytes, epithelial cells, and in many instances, if produced by suitable subjects, will be seen to contain literally hundreds of organisms of various kinds. If instead of coughing at a slide a Petri dish of culture media is used instead, the same organisms as were to be seen on the slide will often grow, and it is interesting to note that what seem to be separate isolated colonies on the plates often prove on examination to be compound colonies containing two or more types of organism. For example, in one subject streptococci, Gram-negative diplococci, and diphtheroids could be seen in the directly-stained droplets. On a plate prepared from the same subject many compound, though apparently simple, colonies grew, some of which contained the same three organisms as were seen in the directly-stained droplets. Therefore a colony on a "coughed-at plate" marks the site where a droplet has fallen, and the droplet may have contained numerous bacteria of several kinds. Even a colony that appears to be a pure culture is unlikely to have arisen from an individual bacterial cell. Another piece of work by Teague [1] showed diphtheria bacilli could be disseminated by droplets. Forty-three diphtheria cases coughed at plates held in front of their mouths and in 28 instances diphtheria bacilli were recovered from the plates.

Perhaps the most impressive demonstration of the transport of microbes by air in droplets is an experiment that Prof. W. Bulloch informed me he often did years ago. After rinsing his mouth out with a suspension of *B. prodigiosus* and coughing, he was able to recover the same organism from the mouth-washings of a subject who was, at the time of coughing, 40 feet away from him.

Dosage and the Velocity of Infection.[2]

It is a common observation that some diseases are easier to catch than others—for instance, small-pox is more infectious than leprosy. The degree of infectiousness of a microbe may to some extent be an inherent property of its specific protoplasm, and it is possible that this character of infectivity may vary in different strains of the same species of microbe. On the other hand, apart from any difference in the quality of the infectious material, the quantity or dose of infectious material received must be of paramount importance in determining whether or not a microbe will be able to establish itself in the host species.

Webster,[3] as a result of his studies in mouse typhoid, considers the number or dose of bacilli to be the most important factor in deciding what type of illness the mouse contracts, and he does not think there is much evidence that the quality of infectivity, per se, varies to any marked degree in the same strain of bacilli under different conditions. Anyhow, animal experiments show that, in many infections, a large number of microbes are necessary before illness or death can be produced. For example, in diphtheria about 50,000,000 diphtheria bacilli are necessary to kill a guinea-pig. However, this dose may be much larger or smaller according to the strain of bacillus used.

Directly a quantity or dosage factor is admitted to a place of importance in microbial infections it becomes absolutely essential to introduce a time factor. For example, suppose 100 is the minimal number of organisms that will enable an infection to be produced in a certain individual; it immediately follows that any number less than this "minimal infective dose" will be rendered harmless by the defensive mechanisms of the recipient host.

Imagine in this case where 100 is the minimal infective dose that 50 microbes are received at one time, and another 50 at a later time, and so on; what will happen? If the intervals between these subinfective doses are long enough for one to be destroyed before a succeeding one is received, obviously in these circumstances no infection is possible. But suppose the intervals between the doses are not long enough for all of the 50 microbes in each dose to be rendered harmless before another dose is received, a certain number will be left over and added to the succeeding dose. And if the process continues and doses, each harmless in itself, go on being received at these short intervals, active organisms will steadily accumulate till they reach the minimal number or "critical dose" necessary to break down the primary defences of the individual and thus start a definite illness.

We are now in a position to combine dosage and time into a velocity and can enunciate the following principle. The velocity at which microbic infection is contracted is the resultant of two other velocities—namely, the velocity at which the defence mechanisms of the host can destroy microbes, and the velocity at which the host receives the microbes. Suppose a certain individual can deal with 50 bacteria per hour; unless he receives more than 50 of these organisms in an hour he can never be infected. Suppose that the "critical dose," which is the minimum number of bacteria necessary to produce infection, is 100. Then, if this individual receives 100 bacteria in a single dose, he immediately becomes infected, but if he receives more than 50 per hour but less than 150 per hour it must depend on how long he remains under the same conditions as to whether or not a critical dose can be accumulated. Suppose he receives 75 microbes per hour. At the end of the first hour there will still be 25 active microbes, since he can only deal with 50 per hour. During the second hour he receives 75 more microbes, to which must be added the 25 left over from the first hour; of this 100, 50 are destroyed, which still leaves 50 active microbes unaccounted for at the beginning of the third hour. Thus in this special instance microbes are accumulating at the rate of 25 per hour, which is the velocity of infection under these conditions. The "critical dose" was postulated as 100, so in this case the time necessary to acquire an infection would be 100 divided by 25—namely, four hours. Should the same man only remain three hours in the same environment he would only have acquired 75 active bacteria, which is 25 less than the number necessary for infection, and on leaving the bacterial environment his natural defences could account for these during the next hour and a half. In the above example, V the velocity of reception was 75; U the velocity of destruction was 50. The velocity of infection was V minus U—namely, 75 minus 50, that is—25. Let M represent the critical, or minimal infective, dose which was 100 in our example. Then if T is the time necessary to produce infection the whole principle relating time to dosage in the production of infection can be expressed as a "pseudo—mathematical equation: $T = \frac{M}{V - U}$. The time necessary to contract infection equals the minimal infective dose divided by the velocity of infection.

It must be understood this formula only envisages a principle which I am convinced is of great importance in understanding the spread of disease. No exact numbers can ever be given to the above letters which are all variables altering from minute to minute and which are bound to be different for each type of parasite and host. In a host possessing a high degree of resistance to infection, the velocity of destruction and the critical dose will both be of much greater magnitude than in an ordinary individual. The velocity of reception will vary with the distance and the character of the source of the microbes, which is generally a patient or a carrier. The atmospheric conditions, the ventilation, and size of the room also play a part in determining the velocity of reception in the case of those microbes which are disseminated by droplet infection.

An example of how the velocity of infection can explain certain phenomena will be given from the study of an epidemic of diphtheria and scarlet fever. In a school which contained both day boys and boarders there were over 300 infections among the 1000 residents; whereas there was not a single case of scarlet fever or diphtheria among the 100 day boys, who freely mixed with the boarders at play and in class. The chief, and practically only difference between the residents and day boys was the fact that the latter slept in their different homes while the former slept, a hundred or more together, in large dormitories.

The study of the incidence of scarlet fever and diphtheria cases and their spread in the school produced evidence that showed the disease spread chiefly from boy to boy in the dormitories; there was little evidence to show much infection was contracted at play, meals, or in the class rooms. It is the absence of any morbidity at all among the day boys that requires an explanation. A lower morbidity in the day boys than in the residents would have easily been explained by less time spent in the school, and therefore fewer opportunities of contact with the distributors of infectious material. This complete escape of the day boys is explained by supposing that the hour to hour and a half spent in the classroom, and shorter periods of still closer contact with carriers and early cases while at play, did not give the prevailing velocities of infection long enough time to produce illness. Any germs the day boys may have collected were easily accounted for on their returning home, or in other intervals of absence from the bacterial environment. On the other hand, the residents spent ten hours continuously in beds with a distance of 4½ feet between their centres, therefore a velocity of infection, which would have been innocuous in the hour or two spent at work or play, had sufficient time to infect during the ten hours spent in the sleeping quarters. In this school *time* was the main factor which controlled the epidemic, and which accounted for a 30 per cent. morbidity in one group of boys against a complete absence of morbidity in another group.

The principle of velocity of infection may be a little difficult to grasp at first, or, rather, the necessity for the introduction of the time factor not fully realised. A further hypothetical example may make things clearer. With certain individuals and in certain types of microbic disease, of course, not all, long continuous stays in an infectious neighbourhood may be more dangerous than many shorter periods spent in the same or an even more infectious environment. Take, for example, a man who travels to his office every day with a friend who is a disease carrier. Every day they spend half an hour in close proximity to each other in the crowded tube, but the man never gets infected from his friend. One day these two men go to a theatre together and sit out a three-hour performance. The man now contracts the disease his friend carries. The velocity of infection was not high enough to cause illness in the half hour spent in the tube, but was great enough to do so in a period six times as long, spent in the theatre. This hypothetical case is purposely chosen as it has been stated, on what grounds I do not know, that disease is more often contracted in places of amusement than in trains and public vehicles; yet, in the aggregate, most people spend more time in public vehicles than at entertainments, and if disease is really more frequently contracted in the latter than in the former, an explanation is easily furnished by the theory of the velocity of infection.

HOST RESISTANCE AND EPIDEMIC IMMUNITY.[2]

In the previous paragraphs mention has been made of the host's defence mechanisms to microbic attack, and to avoid complicating the discussion, up to the present I have treated these mechanisms as if they were a constant factor. Of course, this is not so, as infection depends as much on the power of resistance of the host as on the dosage and infectivity of the microbe. In fact, I think most bacteriologists would say the host's power of resistance was a more important factor than either dosage or infectivity in acquiring a disease.

A population can loosely be divided into susceptible and immune persons. Although this is a convenient convention, yet it is not logically correct. There are few individuals who are completely susceptible, as literally this would imply that a single microbe was sufficient to initiate an illness in them. On the other hand, many of those who are ordinarily immune may, under special conditions, succumb to a sufficiently massive dose of infectious material. Immune and susceptible are, however, convenient terms, provided it is realised that they stand for a very high and very low degree of resistance to microbic infection. The division of the population into two distinct groups may in fact be nearer to the truth than appears at first sight, because there is some reason to believe that, in the majority of people, specific resistance to disease is either high or low—intermediate grades of resistance not being so common. The degree of resistance, even of an individual, is by no means constant and may show periodical variations under different conditions. McCarrison[4] has shown that vitamin deficiency may permit auto-infection by a microbe, which had formerly been living in a state of balance with its host, before the faulty diet was instituted; as he puts it, "the carrier becomes a patient." Thus faulty nutrition can lower resistance. Further examples are the effect of fatigue and chill in lowering resistance to influenza and pneumonia.

The production of an increase of specific resistance to a specific microbe will now be considered. It is one of the oldest observations in medicine that in many diseases one attack confers immunity to a subsequent attack of the same nature. This immunity is very much greater and more lasting in some diseases than in others; for instance, contrast mumps and influenza in this respect. Can an immunity of this specific nature be acquired without actually suffering any symptoms of ill-health? At the present day it is an acknowledged fact that resistance to typhoid fever can be increased by injecting the causative bacillus under the skin, or even by swallowing it. This fact is made use of in the services to control enteric disease by the routine use of prophylactic vaccines.

In a preceding section it was pointed out that in certain environments an individual must often be receiving small doses of microbes, which he is able to destroy without getting ill, provided they are not received too often or too quickly, or, in other words, provided the velocity of infection is small enough. The specific proteins of the microbes in these subinfective doses are absorbed or may be carried by phagocytic cells into the host's tissues, where there is no reason why they should not stimulate the production of antibodies just as efficiently as microbes injected with a syringe. This process is Nature's method of vaccination and may account for much acquired immunity to infection or disease.

This theory of auto-vaccination, as a cause of immunity, receives powerful confirmation from a quite independent source. Digby,[5] in some work that deserves far more attention than it has yet received, produces morphological and embryological evidence to show that the submucous lymphoid tissues (which include the tonsils, Peyer's patches, and the appendix), are not mere vestigial survivals and therefore useless to all animals, except surgeons and pathologists, but that they are organs with a definite function. This function is the collection and absorption of samples of all the microbes in their neighbourhood. Wandering cells from these lymphoid tissues carry the microbes back into the body for the express purpose of stimulating specific defence mechanisms against a further invasion. The very frequency with which these organs suffer local microbic invasion, such as occurs in tonsillitis, appendicitis, and enteric fever, merely indicates that they have fallen victims to their duty by accumulating an overdose of the pathogenic bacteria in their environment. As a result of his researches Digby evolved this theory of natural auto-vaccination, which was independently arrived at by myself as the result of the observations on diphtheria shortly to be referred to. It is now easy to realise that ordinary prophylactic vaccination may only be an imitation of an adaptive defence mechanism, which host species have evolved as their answer to the attacks of parasitic microbes. Walcott[6] has shown that the bacteria were present in pre-Cambrian times, at least 50,000,000 years ago, so that the species in existence to-day are only those who survived in the age-long struggle for existence with the bacterial environment.

Although this theory of auto-vaccination may not be acceptable to some minds, yet that a population can gain a large increase in resistance to diphtheria in the absence of all symptoms of illness, and even when the community is free from cases of clinical diphtheria, is a proved fact. In diphtheria, by the use of the Schick test, it is possible to distinguish the immune from the susceptible. As possibly some may be unfamiliar with the Schick test, the rationale of the test had better be explained The Schick reaction is performed by injecting a minute dose of diphtheria toxin into the skin. If the subject is a negative reactor no redness appears at the site of injection because the injected toxin is neutralised by the diphtheria antitoxin which is present in the blood of those immune to diphtheria. In subjects with a low degree of resistance to diphtheria the injection of the toxin causes an inflamed red patch, because there is no, or insufficient, circulating antitoxin to neutralise the diphtheria toxin which has been injected. For practical purposes Schick positive reactors are susceptible, and Schick negative reactors are immune, to diphtheria.

The results of the Schick tests on the boys of a school showed that during a diphtheria epidemic the majority of the susceptible individuals in this school population acquired diphtheria antitoxin in their blood and thus became immune without suffering from any illness. Further than this, bacteriological investigations showed that when the epidemic had subsided there followed a still greater epidemic of carriers of virulent diphtheria bacilli. During the two years following this school outbreak of diphtheria some 250 "Schick-positive"—that is, presumably susceptible—boys were introduced into this diphtherial environment and about half these boys subsequently became "Schick-negative"—that is to say, they were practically incapable of contracting clinical diphtheria. This immunity was acquired without the boys being ill or, in most cases, without ever having had a chance of contact with a case of diphtheria.

Now this fact, for it is a fact whatever the explanation may be, demonstrates a factor in epidemiology whose importance cannot be exaggerated—namely, that it is possible, in the absence of all obvious illness, for a community as a whole to increase its degree of resistance to a potentially pathogenic parasite. More often than is realised unseen epidemics of "disease carriers" are occurring sometimes without any cases with symptoms to attract attention to them. In many infections undetected carriers must be much more common than cases showing symptoms. In epidemic meningitis, for example, there must be at least 100 carriers to every case of meningitis. In the school which has been used so frequently for examples there were at least ten carriers to every case of clinical diphtheria. These observations should convince us that the carrier state of infection is, under certain conditions, more natural or normal than the definite disease. In addition, under certain conditions, as yet not completely determined, epidemics of carriers can occur without any cases of ill-health to attract attention to them. These unseen epidemics of carriers, in the way just described, are capable of increasing the resistance of the population as a whole to the disease that the carried microbe sometimes causes. In the school under consideration, without the employment of bacteriological tests on healthy boys, no one could have guessed that with a virulent carrier-rate sometimes as high as 10 per cent., and with a complete absence of diphtheria morbidity, susceptible boys were becoming immune to diphtheria at an average rate of about 10 per 100 per month. The increase of resistance to a specific disease parasite thus acquired by a population may conveniently be termed "epidemic immunity." Notice that "epidemics of immunisation" may or may not be accompanied by epidemics of disease.

At present diphtheria is the only epidemic disease which produces an easily identified antitoxin in the blood of the immune, and therefore is the easiest infection to study as regards the proportion of immune to susceptible in samples of the population. However, though the evidence cannot be so direct, many observations indicate that other infections obey the same biological laws. There is no time to discuss this question much further, but in the case of influenza in a school where the morbidity was 25 per cent., the incidence of disease was inversely proportional to the length of residence in the school. This indicates that those groups of boys who had spent the greatest time in the school environment had acquired an increased resistance to attack by the causative organisms of influenza, even if there was no history of their ever having had influenza. Again, during the influenza epidemic there were two obvious waves of the disease in His Majesty's Fleet,[7] a mild first wave followed by a deadly second one. Some ships escaped the first wave; this was a doubtful blessing, as the second wave struck them with more than double the force it expended on those ships which had had the immunising experience of the first wave. In the latter ships the morbidity and mortality was less than half that in the former.

Another example of immunity in absence of symptoms in seen is the case of tuberculosis. During the late war the incidence and severity of tuberculosis was much greater in the coloured native troops, recruited from regions where tubercle is practically unknown, than among British soldiers, all of whom had probably acquired some resistance to the tubercle bacillus, because in England everyone must frequently inhale subinfective doses of tubercle bacilli.

To summarise, the *fact* is this, that many people can increase their resistance to a specific disease without suffering from it. The *theory* used to explain this fact is that in a bacterial environment subinfective doses of organisms are frequently received. These doses are absorbed by the tissues and stimulate the production of antibodies in a way similar to the ordinary injection of a bacterial vaccine. This theory, which may or may not be acceptable, certainly deserves very careful examination in view of the importance of "epidemic immunity."

The Variation of Parasitic Virulence.

The last subject I will deal with is that of parasitic virulence as an adaptable rather than a specific character. For the present purpose virulence can be defined as the extent to which a parasite can injure the host.

The question as to what constitutes the difference between a species and a variety, though of fascinating interest, is too big to treat at length here. Darwin himself admitted species was a convenient conception but incapable of a hard-and-fast definition. A recent authority, Prof. A. Dendy,[8] describes a species thus: "A species is a group of individuals, closely resembling one another, owing their descent from a common ancestor, which has become more or less sharply separated from all other coexisting species by the disappearance of intermediate forms." In this definition the phrase "closely resembling" leaves it to the individual biologist to decide for himself how closely two organisms must resemble each other in order to be two varieties of one species, or to be two distinct species. In this discussion a species will mean a group of parasites which will remain constant in certain characters over the period of human observation. In this respect a meningococcus is a distinct species from a staphylococcus, as even if in the past both had a common ancestor, the intermediate forms have now disappeared. Varieties, on the other hand, have quite recently descended from a common ancestor, and under suitable external stimuli from the environment can revert to the "type species" or change the one into the other within a reasonably short time. Any variations which may take place in pathogenicity or virulence are especially relevant to our subject, and if adaptations they must chiefly occur in the natural habitat of the parasite—to wit, man himself, where, owing to the great technical difficulties, it can rarely be possible to furnish direct proof of their occurrence and still more so of their non-occurrence. It does not seem reasonable, therefore, to consider that virulence is, in all cases, a permanent specific character; still more is this so when we find that in nearly every instance the natural habitat of a pathogenic microbe also supports organisms which are similar in all respects to the disease germ except that they lack virulence. Serological characters, on which the bacteriologist rightly depends so much in identifying disease organisms, are obviously the result of contact between host and parasite. Serological characters are also correlated to some extent with virulence, and nowadays many authorities do not consider the serological individuality of otherwise similar organisms is sufficiently constant to establish a species. For example, four serological varieties of meningococci are usually described, but they are probably only fluctuations within the species, and if the proper stimuli were known, and could be applied, doubtless one type could change into another.

Numerous observations show that species vary directly in response to changes in their surroundings. These fluctuations or adapted variations are often of a quantitative rather than of a qualitative nature. For example, as was seen in the previous section, the species man can be divided into two varieties, the one with a high, the other with a low power of resisting the attack of the diphtheria bacillus, and in this case the resistant variety of the human species is probably an adaptation to an environment containing diphtheria bacilli. The present tendency, I think, favours changes in host resistance rather than variable microbic virulence as the chief factor in the causation of periodic epidemics or changes in the type of infection. On the other hand, the founder of modern bacteriology, Pasteur, considered the chief determining factor was virulence. In some cases pathogenicity may be caused by low host resistance and in others by high parasitic virulence, but most illnesses are probably due to a combination of both these factors.

It seems logical to expect adaptive variations to occur as much in the parasite as the host, especially in the case of the bacteria, who owe their prominent position in the living world to their great plasticity, which has enabled the bacteria to colonise every kind of environment. Superficially virulence appears to be a character that increases the fitness of the organism to live in its environment, and therefore some writers actually refer to loss of virulence as degeneration. Under certain conditions, in a rapidly changing environment, and when susceptible hosts are numerous, increased virulence may be an advantage and a temporary adaptation to meet special circumstances. But in general marked virulence will ultimately become a handicap in three ways. First, by the destruction of susceptible hosts the parasite destroys its own environment. Secondly, a rapid severe illness limits the movement of the host and at the same time limits the distribution in time and space of the causative parasite. Thirdly, virulence may stimulate so much resistance on the part of the host that the parasite possessing it is destroyed in cases where a less virulent strain might have been tolerated. Therefore a permanently virulent parasite will be at a great disadvantage in the struggle for existence, compared with one that can vary virulence to fit different environments. On the whole, virulence shows a lack of adaptation to environment and therefore tends to be eliminated by natural selection.

In many bacterial species virulence, estimated as the power of killing experimental animals, is easily altered in the laboratory. Only two interesting instances of this need be mentioned. Griffiths [9] was able to greatly attenuate the virulence of pneumococci by growing them in a medium containing the homologous antibodies; in other words, by keeping this parasite in contact with the serum of an immune host. The reverse experiment of raising pneumococcal virulence was achieved by Felton and Dougherty,[10] who repeatedly transferred large numbers of the cocci at the time of their maximum vitality into a fresh bulk of nutrient medium and thus kept them continually in an environment favourable for rapid multiplication. Under these conditions the organisms' virulence for mice increased over a million-fold. Just as vaccine prophylaxis is most likely only an imitation of the natural process of acquiring immunity, so it is not improbable that the above experiments also imitate the methods of altering virulence that actually happen in nature. Some observations have been obtained that seem to support such a theory. Towards the end of the aforementioned diphtheria epidemic, though the carrier-rate for virulent diphtheria bacilli was always less than 5 per cent., and a series of Schick tests showed the number of susceptible boys to be only 14 per cent., yet under these conditions membranous diphtheria was still able to spread in the school, as is shown by the fact that 30 cases subsequently occurred. Two years later further Schick tests and throat swabs revealed that in some samples the carrier-rate for virulent diphtheria bacilli was as high as 10 per cent., whereas those boys who gave Schick-positive reactions had increased to 24 per cent. It must be mentioned that the increase in susceptibility of this population was due to the introduction of Schick-positive new boys at the rate of about 50 per term. The boys once immune did not become susceptible again during the period of observation. Thus, after the complete cessation of a diphtheria epidemic, in a population where all other conditions remained unchanged, except that the number of susceptible hosts and the number of carriers of virulent bacilli both greatly exceeded the numbers that existed during the time when clinical diphtheria was still prevalent, no case of the disease had been seen for many months.

The explanation suggested for these observations is as follows. Susceptible boys must have been three or four times as numerous just before the onset of the diphtheria epidemic as during its final phase; therefore the diphtheria bacillus in its passage from boy to boy met conditions, where its activity was unchecked by host resistance, much more frequently at the beginning than at the end of the epidemic. Such conditions imitate to a great extent the method of raising pneumococcal virulence previously mentioned and favour rapid multiplication and maintenance of virulence. Towards the end of the diphtheria epidemic the ratio of immune to susceptible hosts increased up to 6 to 1, so that the diphtheria bacilli had many more opportunities of infecting immune boys as carriers than of causing cases in the few remaining susceptible boys. In these circumstances the greater amount of contact with immune hosts gradually caused a loss of pathogenicity, just as in Griffiths's experiments the pneumococcus lost its virulence in presence of serum from a specifically immune animal. With the loss of pathogenicity the diphtheria bacillus became a less efficient immunising agent and permitted the aggregate susceptibility of the school to increase—a speculation which receives support from laboratory observations on the relative immunising power of virulent and avirulent strains of the same organism. If such a process did take place it may have been aided by artificial selection of the less virulent organisms in this way. All those boys who were infected with diphtheria bacilli and had symptoms were isolated in hospital till free from the specific bacilli, whereas a very small proportion of the total number of symptomless carriers were detected and isolated. Therefore if some strains of the bacillus had a greater tendency to produce cases rather than carriers they got less chance of spreading than other strains, who may have tended to produce carriers rather than cases of diphtheria. A recent series of Schick tests have shown that at the present time, in spite of the prevalence of virulent carriers, the immunity of the population has passed its maximum and is on the decline. The susceptibility, or rather the number of Schick-positive boys in the school, is actually greater now than it was when diphtheria was still capable of spreading. It would be interesting to see what would happen if things were left alone—Will all the carriers disappear, or some persist and, as the number of susceptibles increase, regain the power of causing membranous diphtheria, or must new virulent strains be introduced from another environment before a fresh outbreak of diphtheria can occur? The condition of affairs in the school is such now that it seems unjustifiable not to anticipate a fresh outbreak of diphtheria by protecting the Schick-positive boys with toxin-antitoxin mixture. Unfortunately, if this is done it prevents watching the progress of the diphtheria cycle up to the onset of a fresh epidemic. In other infections besides diphtheria the proportion of those with high, to those with low, resistance to attack may be an important factor in determining whether disease will spread or not.

Topley and Wilson,[11] in their experimental epidemics among mice, found that according as the proportion of mice protected by vaccination was large or small, the mouse typhoid bacillus would or would not spread easily among both the protected and non-protected individuals of the mouse population. Topley rightly emphasises the difference between individual immunity and the immunity of a population as a whole—"herd immunity" as he aptly terms it. Whether "herd immunity" is greater if all the population have a moderate degree of resistance or if some are very resistant and some susceptible is an important problem that yet requires an answer.

According to the thesis that I have been trying to develop the degree of herd immunity determines ultimately the disease-producing power of the biological agents of illness. In influenza, for example, there is little evidence of any lasting immunity conferred by a previous attack, yet naval experience showed that the disease spread less easily and was less malignant in a population that had recently experienced a previous epidemic. That is to say, the degree of "herd immunity" had certainly been increased, even though little difference could be noted as regards individual immunity.

Returning to our main theme of virulence as an adaptive variation, it must be admitted that one of the great objections to accepting altered virulence as a factor in epidemic periodicity, anyhow in the case of diphtheria, is that no difference (worth mentioning here) could be detected in the killing power for guinea-pigs, between bacilli isolated from membranous throats of the epidemic cases and those obtained from carriers more than a year later. To my mind this is not an insuperable objection. The balance between host and parasite is delicate. Parasites when transferred to hosts they do not normally inhabit sometimes exhibit marked and sudden variations, and general biological considerations rather incline one to expect that a recently acquired functional and negative quality, such as loss in the degree of virulence to the specific host, might be wiped out immediately on transferring the parasites to a non-specific host such as the guinea-pig. However, it has to be confessed this speculation is rather crushed by Webster's[12] experiments with mouse typhoid epidemics. This observer was unable to find any alteration of the killing power of the mouse typhoid bacillus when the conditions of experiment were varied, and in this case the same host was used both for the production of the epidemics and for measuring the virulence of the parasite. Should, however, virulence be used in the sense of power of injury to the hosts, rather than the power of killing an animal with a small single dose of microbes, it is quite easy to imagine possibilities where, using the former definition, virulence may be low, while at the same time virulence in the latter sense may be high. For instance, suppose infectivity, per se, decreases—a velocity of infection that formerly was sufficient to cause cases may now only be suitable for the production of carriers; or again, some strains of the same parasite on reaching the mucous membrane may multiply more superficially and slowly than others and permit the host to gain immunity in time to prevent symptoms. These pure speculations are merely introduced to show the complexity of the subject, and that the fact of not being able to detect variation in killing power of a parasite is no argument against some change having occurred in its power of producing disease. The evidence taken as a whole, in my opinion, justifies the following tentative hypothesis.

The reaction of the parasite to increase in host resistance is decrease in virulence. The reaction of the host to parasitic virulence is increase in resistance.

Should this hypothesis be true one would expect that, in a more or less stabilised environment, given time, a position of equilibrium would be reached between the attacking power of the parasite and the defensive power of the host. And in wild life, undisturbed by man, such is generally the case. For example, the wild game of Africa tolerate, without any apparent harm, the same trypanosomes that create havoc among man's domestic animals. In other cases the struggle to attain mutual adaptation by host and parasite, not the struggle between host and parasite, which is another thing altogether, may proceed even further than tolerance and succeed in producing true symbiosis, in which state one partner cannot live its full natural life without the other. A good recently-described example of symbiosis is that of the wood-eating termites, which are inhabited by intestinal protozoa without whose help the termites are unable to digest the wood.[13] In wild animals the struggle for existence is so keen among their offspring that any degree of pathogenicity on the part of a parasite will act as a severe check on the survival of those individuals affected. Sick animals, in general, are soon eliminated, and with them their virulent parasites.

Man, owing to the rapidity with which he has evolved the most efficient, even if yet far from perfect, adaptive mechanism intelligence, is the only host animal which steadily increases in numbers, and his parasites and domestic animals therefore share the increase with him. Man for ever interferes with the environment and mixes up the living conditions of himself and other organisms. By these means the balance between himself and his parasites is continually upset. The penalty for this upset is disease and epidemics, which are due to the parasites or the hosts not being able to adjust themselves quickly enough to the new conditions in their environment. Man, with his domestic animals and plants, though no more highly parasitised than many wild animals, yet in comparison to the latter almost monopolises parasitic disease.

Seventeen years ago Sir Ray Lankester[14] drew attention to this important, though somewhat neglected, fact, and I cannot do better than close this paper by quoting his words: "It is a remarkable thing—which possibly may be less generally true than our present knowledge seems to suggest—that the adjustment of organisms to their surroundings is so severely complete in Nature apart from Man, that diseases are unknown as constant and normal phenomena under those conditions. It is no doubt difficult to investigate this matter, since the presence of Man as an observer itself implies human intervention. But it seems to be a legitimate view that every disease to which animals (and probably plants also) are liable, excepting as a transient and very exceptional occurrence, is due to Man's interference."

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SOME CLINICAL OBSERVATIONS ON
HELIOTHERAPY IN PULMONARY TUBERCULOSIS.

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(*With Illustrations on Special Plate.*)

THE sun-cure is now, thanks to the work of Bernhard and Rollier in Switzerland and Gauvain in England, generally admitted to be the most satisfactory method of treating the large majority of cases of localised or surgical tuberculosis—i.e., tuberculosis of the bones, joints, glands, and serous membranes. On the other hand, the sun treatment of pulmonary tuberculosis has fallen into disrepute and is generally considered dangerous by experienced medical officers at sanatoria. This is because sun treatment has, in many cases in the past, been tried on pulmonary cases in sun-boxes open only to the south or under glass, where a greenhouse effect has been produced, and because febrile cases have been submitted to such conditions which overheat in place of cooling the body. Moreover, a febrile case is fighting against active disease. Products of tissue destruction produced by the bacterial invasion of his tissues are being absorbed and his immunising power is being excited thereby. What he at the moment lacks is sufficient natural response. To sunburn him and throw extra products of tissue destruction into his blood is then wrong. His immunising powers are already over-taxed and cannot be further aroused. He needs, if only such could be had, an active anti-tuberculous serum taken from an animal immunised against the tubercle bacilli and in open cases against the other bacilli which produce secondary infection of the lung. People afflicted with pulmonary tuberculosis have been told, and are sometimes still told, to go to the south of France, the Swiss Alps, or some other sunny part of the world, and to sit about there in the sun, and they will soon be all right again. They take such advice, often with disastrous results. It must be recognised that indiscriminate and uncontrolled use of the sun in pulmonary tuberculosis is fraught with danger and must be vetoed. If applied wrongly and to the wrong type of case, sun treatment may set up flaming activity in a lung where the disease was, perhaps, only smouldering, and would have settled down under ordinary climatic and hygienic treatment.

Method of Treatment.

The point, then, is first to select those cases likely to be benefited by a course of heliotherapy, and, secondly, to endeavour to control the dosage and application of the treatment in each instance. First of all, it should be clearly recognised that it is not a hot sun which is required, but pleasantly warm sun-light and cool air. The treatment should not be carried out in an enclosed space, which is liable to become stuffy and hot, but should be done, as far as possible, in the open, with cool fresh air circulating freely around the patient.

The cool, dry air of the Swiss Alps in winter is one of the most beneficial factors in the proper application of the sun treatment in cases of pulmonary tuberculosis. The patients can be exposed with a loin cloth on or in a thin bathing costume on an open roof with their lounge chairs placed on the snow; the winter Alpine sun will gratefully warm them while they turn now their front and now their back to it. At the same time their metabolism will be stimulated by the cool air, and they will breathe cool dry air which enhances the flow of blood lymph and secretion in and through the respiratory membrane. The cool air, too, will moderate the action of the sun-rays on the skin. This method has been tried by us with good effect and has proved a valuable supplement to general treatment. We have designed shelters on the roof of the sanatorium with walls just high enough to give privacy and open to the sky. It is in the winter, when the snow has fallen, that the ultra-violet rays of the sun are least strong, and the cooling power of the air most in evidence, and it is in the winter, therefore, when the best results from this gentle moderated heliotherapy are to be expected. The winter sun is warm enough and even too warm sometimes at midday. On the other hand, the summer sun is very powerful round about midday. It must be used in the cool early morning hours when the sun is low in the heavens and its rays mostly absorbed by the atmosphere.

Types of Disease Amenable to Heliotherapy.

Heliotherapy may be tried in cases of tuberculosis of the lungs, where the disease is of the localised, single-focus type, thereby approximating in character to surgical tuberculosis. In cases where there is no fever and in which the activity of the disease has become arrested, but which are "sticking" and still have sputum containing tubercle bacilli, much benefit may be derived from such a course of sun-baths; the healing process is stimulated and the sputum and spitting of tubercle bacilli may cease.

Where the disease is of the scattered type, and especially where there is a liability to fever, either periodical or continuous, sun-bathing is dangerous and should not be attempted. Cases which easily auto-inoculate themselves and those who are prone to hæmoptysis should avoid exposure to the sun, but such cases are benefited by exposure to the cool air and ultra-violet radiation of the sky. From exposure to the sun, on the other hand, good results have been obtained in those instances where the disease is of the pleural type, with much thickening of the pleura and contraction of the chest; the thickening and adhesions are absorbed and cleared up, the lung expands and functions again, and there is a great general improvement in health. Another type which does well is the bronchial asthmatic.

As a general rule, it may be stated that where there is smouldering activity of the tuberculous process, as evidenced by fever, a tendency to auto-inoculate on exertion, hæmoptyses and other signs and symptoms of activity, then sun-bathing must be left alone, and the ordinary treatment of rest and open air carried out. Sun-bathing may be used as an additional stimulus to a case which is becoming cured, but in which progress is slow.

Sun-bathing consists in becoming gradually accustomed to withstand the rays of the sun, and should be commenced slowly, and increased regularly according to the needs of the patient. The head and neck should be kept covered. Sun-burning should be avoided, slight erythema followed by pigmentation, not burning, being what is required. When once pigmented and well on the road to cure the patient can stand more and more exposure to the sun. If the patient becomes fatigued, sweats much, or has a definite febrile reaction, the time of exposure to the sun must be cut down. Dark-haired people become accustomed more easily than fair ones to the sun's rays; in fact, some fair and red-haired people find it impossible to undertake a course of sun-baths. Toleration largely depends upon the amount of pigmentation that occurs, but the whole procedure, especially in pulmonary cases, should be a very tentative one, and most carefully controlled and watched. While much good may be done by sun treatment, this, if carried out wrongly, may cause a great deal of harm.

We are indebted to Mr. P. G. Sutton, radiographer at the English Sanatorium at Montana, for the photographs.

(*Continued from preceding page.*)
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THE
MORBID ANATOMY AND PATHOLOGY OF SPRUE,

AND THEIR BEARING UPON ÆTIOLOGY.

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(*With Illustrations on Special Plate.*)

One of the outstanding problems in tropical medicine at the present day is the true pathology and ætiology of sprue. All attempts up to the present to isolate a specific agent or organism have failed, nor has any really clear idea of the true pathology of this mysterious disease been formulated. This is a question of primary importance, for sprue is a widespread tropical disease, and in certain endemic areas, as in India and Ceylon, the number of sprue cases amongst European residents appears to be much greater than was formerly the case.

The *geographical distribution* of sprue has peculiarities which may have a very distinct bearing on its ætiology. Sprue is common in the Eastern Tropics as well as in South America, Southern United States, and North Australia. On the other hand, as has been remarked, but not, I think, sufficiently emphasised, sprue is entirely absent from Tropical Africa. Another point of prime importance is the predilection of the disease, in endemic areas, for the European in preference to the light or dark-skinned Asiatic.

Relation to Pernicious Anæmia.—A third point is the close clinical resemblance of some cases of pernicious anæmia to sprue, especially as regards their onset.

Pathology of Sprue.

Existing accounts of the morbid anatomy and pathology of sprue are very meagre. Much of the older literature treats of naked-eye changes in the intestines and organs which are obviously the result of post-mortem decomposition. It has been realised for some time that the true pathology of sprue cannot be based upon the appearances of cases dying of atrophy after a wasting illness prolonged over many years. The post-mortem appearances seen in these latter cases are the result of long starvation, and probably the early essential lesions of the disease have long since disappeared.

Emphasis has mostly been laid upon the marked attenuation of the small intestine, and the complete stripping of the mucous membrane. From time to time the liver, on account of the remarkable wasting this organ undergoes, and the pancreas, on account of the fibrotic changes observed, have been incriminated. But clinical observations lend no support to these views. On clinical grounds one is at least justified in surmising that the primary lesions are in the small intestine, and that the well-known ulcerations of the mouth and tongue are of a similar nature. In order to ascertain whether this is true it is necessary to examine at autopsy early and rapidly fatal cases of sprue. I have always been of the opinion that in early cases only will the true ætiological cause be discovered.

We have in bacillary dysentery an almost analogous case. We know that in this disease the appearance of the intestines in the chronic stage bears no resemblance to the acute necrotic, congested gut of the early infection, so that it would be impossible, without extensive experience, to say that the one was the outcome of the other. We further know that, as fibrotic and atrophic changes in the gut walls take place, so the ætiological cause—the dysentery bacillus—entirely disappears. So may it be in sprue.

Evidence is now accumulating that the essential primary lesion of sprue is an ulceration of the small intestine, chiefly affecting the lower end of the ileum. It is possible that in the mild cases the ulceration is superficial, leading merely to a catarrhal state of the mucosa, while in more serious cases the ulceration may be more extensive and involve the submucous tissue of the gut, and may, on occasions, perforate the gut wall and lead to general peritonitis and death, as in the two instances cited below.

Previous Cases.—Faber[1] in 1904, and Justi[2] in 1913, have published accounts of carefully conducted autopsies, in which a specific ulceration of the small gut was found, together with widespread destruction of the villi. Fischer and von Hecker[3] in 1922 published a study of a case dying of acute sprue, in which small linseed-shaped ulcers were present in the mucosa of the lower jejunum and ileum. In the cæcum numerous attenuated patches were present. No micro-organisms were demonstrable in the ulcers, nor could yeast cells be cultured from the lesions. In the bowel wall a diffuse hæmochromatosis, due to lipofuscin, was present. These investigators consider the ulceration of the bowel as specific of the disease.

Two Cases Described.

Within the last three and a half years I have had the somewhat exceptional opportunity of observing two rapidly fatal cases of sprue, and of making complete investigations with both of them.

Case 1.—An ex-soldier, aged 40, who had served with the Yeomanry in Salonica, Palestine, and Syria. This is the first case of this disease to be recorded from those countries. A year after demobilisation, in the early part of 1920, diarrhœa commenced; this was of the usual type—i.e., white, frothy, liquid stools passed in the early hours of the morning, together with progressive emaciation. The tongue and mouth symptoms appear never to have been well marked; the patient complained mostly of great sensitiveness of the mucous membrane of the lower lip, the tip and sides of the tongue. When first seen on 7/9/20, the patient was in a very emaciated condition, his voice was husky, the skin was dried, the abdomen was distended with gas, the liver dullness was much reduced, being barely perceptible to percussion.

He was admitted to hospital on Sept. 9th, and was placed upon purely milk diet. The stools then rapidly assumed typical sprue-like characters, being semi-solid, large, white, and greasy. In spite of the milk treatment, the patient continued to lose weight and to suffer from acute indigestion and flatulence. His weight, which was normally 12 stone, fell to under 7. Various changes of diet were tried, without any ascertainable effect. At the beginning of October dark patches appeared on the tips of both toes, which resembled incipient gangrene. Subsequently he complained of great pain in the right iliac fossa, and on several occasions vomited large amounts of undigested food. On Nov. 25th there was little doubt that general peritonitis had set in; an exploratory laparotomy was therefore performed, and general plastic peritonitis was found present throughout the whole abdomen, but no perforation could be located. Death occurred two days later. The blood pressure, which was systematically taken, was observed to fall from 120 mm. Hg systolic, till it reached 90 mm. Hg. The gastric juice contained no free hydrochloric acid. The blood examination showed a slight degree of anæmia, the hæmoglobin being 90 per cent., the red cells 4 million. Little assistance was obtained from sigmoidoscopic examination, which showed a diaphanous condition of the lower bowel and superficial reddening of the mucous membrane.

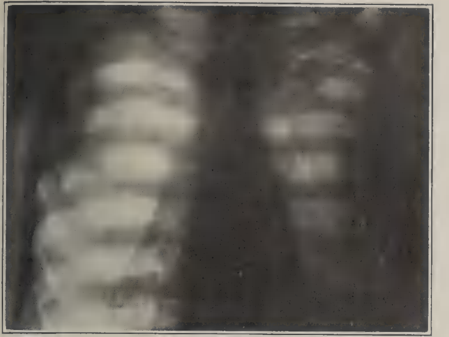
Post-mortem Examination.—General atrophy of all the organs, and especially of the liver, was noted. The small intestine was distended with gas, the walls were transparent, and there was one large ulcer in the ileum six feet from the ileo-cæcal valve, situated on the surface of the bowel opposite the mesenteric attachment. It measured one inch in diameter and had perforated in two places where recent plastic peritonitis had set in, and had become adherent to neighbouring coils of small intestine. The contents of the small bowel were similar to the stools observed in life.

The microscopical appearances of the organs were in the main similar to those described in the next case.

Case 2.—An engine-driver, aged 41, from Ceylon, where he had resided for 13 years. His illness commenced in June, 1920, with sudden explosive early morning diarrhœa and the passage of frothy, light-coloured stools. In August, 1920, he returned to England, but the diarrhœa continued, and in fact got much worse. It was accompanied by great emaciation, and in October—i.e., four months after the commencement of the illness—the tongue symptoms set in, and at the same time small yellow and very painful aphthæ made their appearance on the sides and tip of the tongue, as well as on the mucous membrane of the mouth.

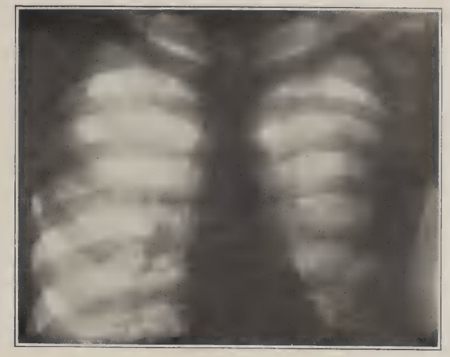
DRS. B. HUDSON AND L. HILL: HELIOTHERAPY IN PULMONARY TUBERCULOSIS.

FIG. 1.



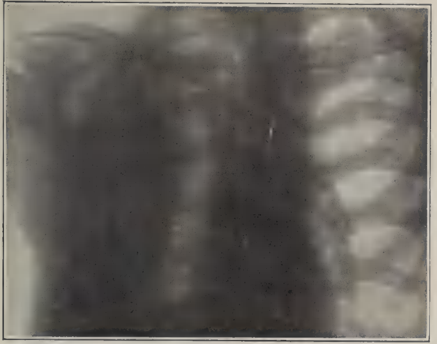
Case 1.—Radiogram taken Dec. 27th, 1922, showing thickening of pleura on left side.

FIG. 2.



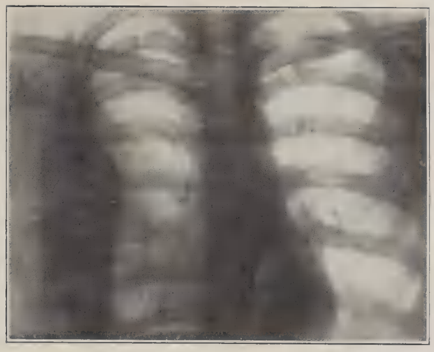
Case 1.—Taken April 16th, 1923, after a course of sunning, showing great improvement.

FIG. 3.



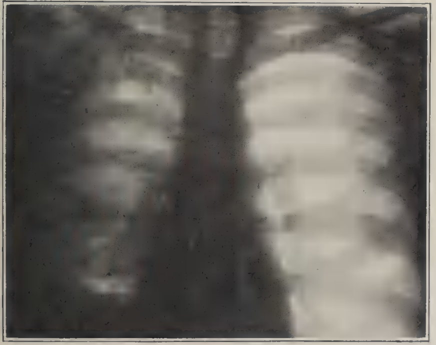
Case 2.—Taken March 24th, 1922, showing extensive pleural thickening over whole of right lung.

FIG. 4.



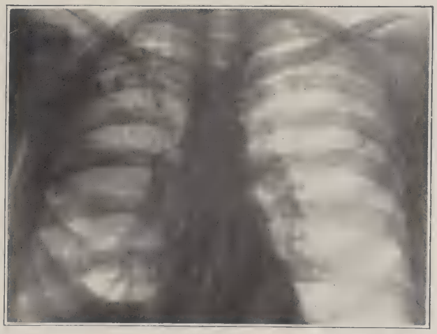
Case 2.—Taken Nov. 10th, 1922, showing improvement after a course of heliotherapy.

FIG. 5.



Case 3.—Taken March 7th, 1923.

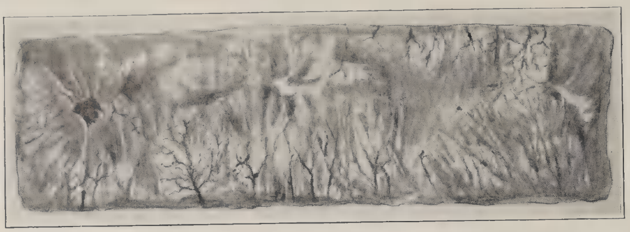
FIG. 6.



Case 3.—Taken Nov. 20th, 1923.

DR. P. MANSON-BAHR: MORBID ANATOMY AND PATHOLOGY OF SPRUE.

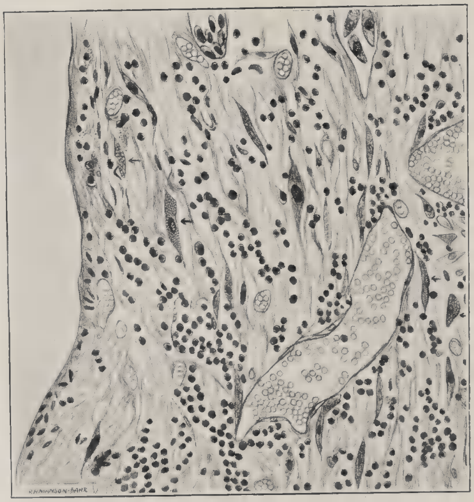
FIG. 1.



From a drawing by the Author.

Lower portion of ileum, showing ulceration with production of patches of diaphanous and attenuated bowel. The enlarged and dilated nutrient vessels can be seen in the submucosa. The bowel is viewed as a transparent object.

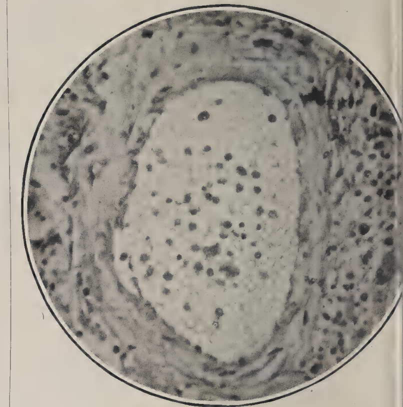
FIG. 2.



Section through base of ulcer (camera lucida), showing deposition of lipofuscin, dilatation of capillaries, and round-cell infiltration. × 175. Arrows indicate the pigment-containing cells.

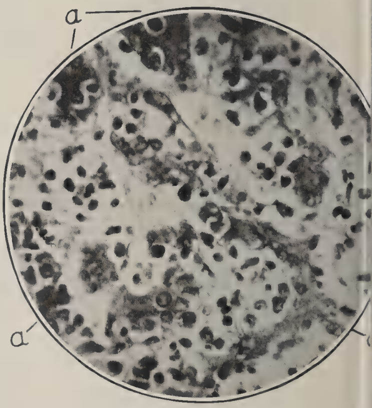
DR. A. DINGWALL FORDYCE AND DR. W. GRANT McAFEE: TENDENCY OF THE NEW-BORN TO JAUNDICE.

FIG. 1.



Hepatic artery packed with erythrocytes, showing also the increased numbers of nucleated cells—viz., erythroblasts, &c. × 400.

FIG. 2.



Liver showing surviving columns of atrophying and degenerating hepatic cells (*a a*), and the great increase of nucleated cells in and about the sinusoids. The erythrocytes have disappeared owing to post-mortem change. × 500.

He was admitted to hospital on Oct. 14th, 1920. The condition on admission was as follows: He was a big-made man, who had obviously lost weight—according to his statements already 2 stone—and now weighed 9 st. 6 lb. The tongue was pointed, glazed, and intensely hyperæmic. There was one typical sprue ulcer, almost the size of a threepenny-piece, at the tip. The mucous membrane of the mouth was engorged, especially at the inner surface of the under-lip. The abdomen was distended with gas, and the stools were large and quite typical of the condition. The patient looked extremely ill, and his skin was loose and inelastic. Secondary anæmia was present in a marked degree; hæmoglobin 70 per cent. normal; red blood corpuscles 3½ million. The stools, numbering between three and four in 24 hours, were large, frothy, and light-coloured, weighing 20 to 30 oz., and in every way typical. The urine was highly coloured and contained urobilin. The physical examination of the patient revealed little save some diminution in liver dullness and tympanitic distension, especially of the small gut. On being placed on milk treatment immediate improvement took place, increase of weight, and quiescence of symptoms. After six weeks in hospital he was discharged to convalescence, but returned on Jan. 4th, 1921, with an exacerbation of the condition. He was then desperately ill, and the diarrhœa continued in spite of several kinds of treatment, with loss of weight approximately averaging 3 lb. a week. The diarrhœa varied, but was apt to recur suddenly without any apparent cause. The stools became liquid and curdled, being very offensive and greenish in colour, and from time to time contained thick mucus and blood. Sigmoidoscopic examination of the rectum revealed merely a superficial pink hyperæmia. Towards the end the stools became more bilious, while pigmented spots appeared around the hair follicles on the abdomen, and hæmorrhages on the back of the hands and forearms. At this time the patient complained of great pain in the lower part of the abdomen. Throat symptoms were also noted, the gullet appeared raw, and the patient had great difficulty in swallowing. Considerable diminution of the liver dullness took place, reaching merely from the eighth rib to the costal margin. Death took place suddenly on April 28th, 1921. He then weighed 6 st. 7 lb.

Post-mortem Examination.—At autopsy, 12 hours after death, the skin was bright lemon-coloured, with entire absence of subcutaneous fat. Petechial hæmorrhages were present, especially on the arms and legs. On opening the abdomen peritoneal pus was found in the right iliac fossa. Small petechial hæmorrhages were noted in the posterior peritoneum, as well as on that covering the large intestine. General plastic peritonitis was noted in the pelvis as well as the last two feet of the ileum, which was hæmorrhagic and covered with solidified lymph; the descending colon and the rectum were in a similar condition.

The mucous membrane of the large gut appeared normal, and the surface was covered with thick viscid mucus. The mucous membrane of the cæcum was plum-coloured and partly hæmorrhagic. The main interest centred in the ileum. The mucous membrane was acutely inflamed, with diaphanous transparent patches. Twelve ulcers of varying sizes, situated on the surface opposite the peritoneal attachment, were found, separated from each other at regular intervals of about 9 inches. The greatest number of ulcers was found in a length of gut about 4½ feet. These ulcers were more or less of the same size, roughly oval in shape, with puckered, rolled margins, and hæmorrhagic bases. When held up to the light they were found to be translucent, and in all of them actual perforation of the bowel had occurred. In size they varied from 0·5 to 1 cm. (Fig. 1 on Plate). The ulcers had no relation apparently to Peyer's patches, which were normal in appearance. The upper part of the ileum and jejunum were slightly hyperæmic, and in the upper part of the jejunum one small ragged ulcer, 3 mm. in diameter and similar to those already described, was present. The mucous membrane for an area of 3 inches around this spot was inflamed. The mucous membrane of the duodenum showed catarrhal changes.

The fæcal contents of the intestinal canal were also of interest. The lower part of the duodenum and ileum were filled with light-coloured, fluid, sprue-like fæces, which were entirely odourless. In the large intestine the colour was similar, but they were more consistent and offensive. The mesenteric glands were enlarged, pink, and injected. As regards other organs there is little to note, save a diminution in weight, as shown by the following table: The liver weighed 34½ oz., spleen 4¼ oz., lungs 17 oz., kidneys 4½ oz. each, heart 5 oz. The liver gave a marked blue ferrocyanide reaction, indicating that an extensive hæmolysis had taken place. The gall-bladder, which was collapsed, contained a few c.cm. of amber-coloured bile.

Cultures were made from all the organs, as well as from the mucus, throughout the whole intestinal canal, both in nutrient as well as in glucose broth. No yeast cells were seen or growth obtained from any of these situations. Scrapings were made from the ulcers themselves, and examined under a dark-ground illumination for the detection of spirochætes or other characteristic appearances without success. Tuberculous infection was definitely excluded. The tissues were all examined microscopically, of which the following is the report:—

Morbid Histology.—Tongue: There is an almost total denudation of epithelium, and the subepithelial papillary structures are irregular, with hyperplasia of the connective tissue. Brownish-yellow pigment is present, either as fine granules or in aggregated masses up to 10 μ and over. These are sparse in the deeper layers of the epithelium, more numerous in the subepithelial connective tissue. The larger individual granules are situated in the upper part of this tissue, the aggregations in the deeper layers. In the muscle area they are very rare, and, when present, are in the inter-fibrillar connective tissue, not in the muscle itself. The capillaries generally are congested.

Small intestine: Jejunum and ileum. Save at the site of the ulcerations, no general loss of surface epithelium appears to have taken place, though, on account of post-mortem changes, this point is difficult to determine. As I have already pointed out in my studies on this disease in Ceylon,[4] there is a general atrophy of the villi themselves due to fibrosis, and a diffuse round-cell infiltration of the whole of the mucosa. There is also a general fibrosis of the submucosa and dilatation of the capillary vessels. In the tissues underlying the ulcers are numerous granular masses of a yellowish-brown pigment (hæmofuscin), but beneath the lateral margins pigmentation becomes more scanty. In the tissue itself lymphocytes are the predominating cells, while fibroblasts are few, eosinophils scanty, and polymorphonuclears almost entirely absent. Masses of pigment can be distinguished in the neighbourhood of the muscularis mucosæ, where it is for the most part enclosed in endothelioid cells, the nuclei of which in some cases appear to have been displaced or destroyed by the accumulated pigment granules. Appropriately stained sections failed to reveal any micro-organisms, save in the superficial necrotic layer forming the base of the ulcer.

Pancreas: Is to all appearance normal; the cells and nuclei stain well, there is no infiltration, no atrophy of cells, and no pigment seen.

Liver: Some degree of fatty metamorphosis is seen in the periphery of the lobules, and in these parts also many cells contain a very finely granular yellowish-brown pigment. In certain areas all the cells show this, but here, too, the peripheral cells are much more densely packed with it. There is no increase of connective tissue, nor any indication of inflammatory reaction.

Kidney: Very little change. In some areas the epithelial cells stain badly—probably a necrobiotic condition. The vessels generally are congested, and a few of the convoluted tubules contain hyaline material.

Spleen shows increase in connective tissue, trabeculæ prominent. Vessels congested, and here and there are minute extravasations. Many of the pulp cells are filled with finely granular dark-yellow pigment, or with round masses similar to those seen in the small intestine. In some areas every cell contains this pigment. The interstitial tissue does not show any.

Large intestine: Does not show in this case any subepithelial vascular infiltration nor any pigment-bearing cells as recorded by Fischer and v. Hecker.

There is evidently a remarkable similarity in the gross pathological changes and finer histological details to the description given by the last-named workers. The essential anatomical lesion in sprue appears to be an ulceration of the small intestine which, if it continues long enough, leads to the complete atrophy of the villi, such as is observed in the chronic stage of the disease, and one may surmise that the aphthous ulcers which commonly occur in the mouth and on the tongue in sprue are part of the same pathological process. But probably the complete denudation of the tongue, the shrinkage of the various viscera, and the extreme atrophy of the small intestine which is seen in these cases are to some extent ascribable to malnutrition.

Pathological Lesions in Relation to the Clinical Phenomena.

Are the pathological lesions in these cases sufficient to account for the well-recognised clinical phenomena of sprue? First, as regards the stools, these are characterised by their large size, their gaseous character and absence of the customary fæcal pigment, or stercobilin. The bulk of the fæces can be accounted for by the large amount of non-absorbed fat which they contain. Recent analyses seem to show that an explanation may be found in failure to absorb the fats already digested by the pancreatic juice. The total fat content of the fæces in sprue varies from 34–57 per cent.[5] (sometimes as high as 63 per cent., Willmore) of total fat in the fæces, a figure which is greatly in excess of the normal (15–25 per cent.), while the fatty acids preponderate over the neutral fats and soaps in a proportion of 3 : 1 or 5 : 1 (J. D. Thompson). The fat has therefore been digested, but cannot be absorbed through the villi of the small intestine; this may be due either to their actual destruction or to the chronic inflammation interfering with the passage of the digested fat into the lacteals. Sections of the small intestine show a widespread round-celled infiltration throughout the mucosa.[4]

Recently attention has been drawn to the close similarity between cœliac disease in children and sprue. The resemblance really lies in the stools, for in many other respects the two diseases are distinct. In cœliac disease[6] the essence is a mal-absorption of fat in the diet, probably due to a digestive fault. The fæces contain 30–80 per cent. of fat, of which the greater proportion, as in sprue, is a fatty acid. There is some evidence that in this disease the pathological lesion lies in an obstruction of the lacteals themselves, not in the mucosa, as in sprue.

It has long been known that cases of tabes mesenterica may pass copious greasy offensive stools somewhat resembling those of sprue. Ryle[7] has recently pointed out that the inability to absorb fats in this instance is to be ascribed to obstruction of the lacteals by tuberculous mesenteric glands, and it is probable that this is also the essential lesion in cœliac disease.

In complete destruction of the duct of Wirsung copious pale greasy stools are passed, and in this case the amount of unaltered fat in the fæces may rise to 50 or even 90 per cent.[7] of the total, while the neutral fats are greatly in excess of the fatty acids, but in this case stercobilin is present in the fæces, although its colour is masked by the fat. In pancreatic disease the diastatic test of the urine affords aid in diagnosis, but in cases of sprue I have investigated the diastatic value is invariably low, thus indicating that it is not the pancreas that is involved. The pale colour of the sprue stool is to be attributed to the excess of unaltered fats and fatty acids. The normal fæcal pigment stercobilin is present, but has become reduced, apparently by abnormal or excessive bacterial action, into a colourless compound, but which on oxidation rapidly becomes converted into brown pigment.[8] The appearance, size, and chemical composition of the sprue fæces, as well as the pigmentary changes, can, on the basis of our present knowledge, be ascribed to destruction of the absorption surface of the ileum, and to hurrying on the contents of the jejunum through the large gut.

Should this view be correct, and the main phenomena of sprue be attributable to a mechanical interference with digestion, then symptoms similar to those of sprue should be reproduced by other diseases involving the mucous membrane of the ileum. That this may be so is illustrated by the following case which, through the kindness of Dr. J. G. Willmore, I am permitted to quote. The case was generally regarded as one of sprue; the fæces were quite typical and contained 53 per cent. of fat. Later, as symptoms of intestinal destruction supervened, a laparotomy was performed, and a malignant growth of the ileum removed, after which the fæces resumed a more normal size and colour, and the fat content was reduced to 25 per cent. And, apparently in extensive tuberculous ulceration of the ileum, a similar fatty sprue-like stool is produced.

Secondly, as regards the anæmia. A certain degree of blood destruction is present in nearly every case of sprue; as a general rule, it is most marked in long-standing cases, and in them appears to be consequent upon the intestinal symptoms. In extreme cases the blood picture may resemble that of pernicious anæmia and is of the aplastic type. But, on the other hand, in some advanced cases anæmia is not always noticeable. It has been suggested that the presence of anæmia is dependent upon achylia. But it is not in every case of profound sprue-anæmia so far investigated that a normal or even excessive hyperchlorhydria is present; on the contrary, fractional gastric tests in the majority of ordinary cases give a normal acidity curve. (Recent analyses of my own cases.)

In my opinion the hæmolysis is consequent upon the ulceration of the small gut, and that a very considerable degree of blood destruction takes place in the gut wall at the base of the intestinal ulceration can be gathered from a study of microscopic sections (Fig. 2 on Plate), when destroyed blood pigment can be distinguished within the phagocytic cells. That a very active hæmolysis occurs in sprue can be judged by the ferrocyanide reaction in the liver, which was most intense in the two cases which form the basis of this study. I have also[11] previously remarked upon the presence of Russell's bodies in sprue tissues, especially in the spleen pulp; these bodies are regarded by Woodcock as the result of hæmatophagy and as possibly due to some specific hæmolysis, but, at any rate, they are present in tissues in which rapid blood destruction is taking place.

The Question of a Specific Organism.

Is there any evidence that a specific micro-organism is responsible for the specific lesions of sprue? The presence of yeast fungi in the intestinal contents, the buccal cavity, and fæces of sprue has attracted a considerable amount of attention. Originally these organisms were considered by Kohlbrugge as identical with *Monilia albicans*, a view I have always endorsed. At present I regard these organisms as merely a superimposed secondary infection, such as is liable to occur in any prolonged wasting disease, such as diabetes, tuberculosis, carcinoma, &c., and as by no means peculiar to sprue. Furthermore, I am of the opinion that a yeast infection in sprue is much more likely to occur within the tropics, and then only in advanced cases of this disease. It will be noted that in the two cases under review these organisms were entirely absent, both from the fæces during life and the viscera after death, although cultures on appropriate media were made under the most favourable conditions.

Ashford,[14] on the other hand, considers that sprue is a mycosis of the intestinal canal superimposed upon some food deficiency, and that the pathogenic agent is a specific species of yeast cell—*Monilia psilosis*, distinguishable from *Monilia albicans*—the thrush fungus. His theory is that in sprue there is a glandular deficiency in which the pathogenic fungus *Monilia psilosis* finds a congenial medium in which to multiply. This view has not received any great measure of support.

McCarrison[15] has shown that atrophic changes in the small intestine of monkeys may be produced by a vitamin-free diet, but, on clinical grounds, there is no evidence that the lack of vitamins plays any part in the production of sprue, at any rate, in Europeans in the East. Scott[16] has put forward, as a plausible hypothesis, that sprue may be due to an error of calcium metabolism. Many of the symptoms may be ascribed to calcium deficiency, which ultimately produces an ulceration of the small intestine and the passage of an excess of calcium salts in the fæces, and in a recent paper Ryle[7] ascribes tetany and other symptoms of cœliac disease (which are also common to sprue) to excessive excretion of the same substance. These suggestions, though somewhat indefinite at present, afford food for reflection, and indicate lines upon which future research should be based.

I am greatly indebted to Dr. H. H. Scott for critical examination of the histological specimens, while to Dr. H. B. Newham, C.M.G., Director of Pathology at the London School of Tropical Medicine, for the preparation of microscopic sections, and to Dr. A. L. Gregg, superintendent of the Hospital for Tropical

Diseases, for material assistance, my best thanks are due. Dr. J. G. Willmore has assisted me with suggestions based upon his own recent experiences of sprue.

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THE TENDENCY OF THE NEW-BORN TO JAUNDICE:

WITH REPORT OF A CASE OF GRAVE FAMILIAL JAUNDICE.

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(With Illustrations on Special Plate.)

IT is a universally recognised fact that new-born babies tend to become jaundiced; the reason for this fact is still to seek. There is peculiar difficulty in distinguishing between the physiological and the pathological in the new-born; the results of antenatal and natal environment are often apparently overwhelming—for a time, at least—and variations in either entail labile boundaries to the sphere of physiology. It appears that about one out of every two babies born is jaundiced within the first few days of life, and that, so far as can be determined, the presence of this jaundice in itself does not adversely affect the prognosis—i.e., that it is not evidently pathological. As explanation of the symptom of jaundice in these cases Hess[1] favours the work of Ylppo[2] as showing that it is hepatogenous in origin, and considers that a hæmatogenous origin can be excluded; Rolleston[3] favours the theory of a hæmolytic origin and adduces the work of McNee[4] with the van den Bergh test in support; and Ritter von Reuss,[5] while adhering to no particular theory, says, "Whether icterus neonatorum rests on a uniform ætiological basis, or whether it be the outcome of various factors, it is none the less justifiable to speak of icterus neonatorum as a definite entity owing to the peculiar tendency shown by the new-born towards this condition."

The symptom of jaundice is often met with in the new-born; its cause is still undetermined and possibly varies in different cases, a jaundice which is commonly regarded as physiological. Much more rarely this symptom is also met with as one expression of a serious pathological condition. Jaundice of grave significance—icterus gravis as distinct from icterus neonatorum or physiological jaundice—occurs as a result of one of three possible pathological conditions: (1) hepatic deformity—e.g., congenital obliteration of the bile-ducts; (2) infection—e.g., obvious sepsis—sometimes congenital syphilis; (3) hæmorrhagic disease of the new-born. Included in the second category are Buhl's disease or acute fatty degeneration of the new-born, and Winckel's disease or afebrile cyanosis and jaundice with hæmoglobinuria.

In all these cases jaundice, while a striking symptom and often the outstanding symptom, is but a subsidiary phenomenon in the systemic complex; and while in cases of gross deformity, disease, or infection the differentiation from simple icterus neonatorum may be easy, yet there are many borderline cases in which the diagnosis is often one of the greatest difficulty. We meet also with cases of habitual icterus gravis or grave familial jaundice of the new-born. Such cases are those of successive infants in a family becoming jaundiced very soon—a few hours to a day—after birth, dying in coma and sometimes with convulsions, and post-mortem examination failing to reveal a cause. This category, like most others dealing with neonatal jaundice, is somewhat indefinite. Ritter von Reuss (loc. cit.) "is doubtful whether we are justified in assuming a clinical uniformity of the cases." Several or even many cases in one family may result from various and different causes.

But whatever may be the cause—and here again are rival theories as to infection and primary functional abnormality of the liver—published reports support the contention that such a clinical entity exists. Rolleston,[6] in 1920, was able to collect 130 cases, and of these 100, or 77 per cent., proved fatal. He suggests that "in its most complete form the disease is hereditary, the mother becoming jaundiced during the pregnancies of jaundiced infants, and that the usual form is an incomplete manifestation of the morbid process."

Within the past 20 years there have been many publications on the subject, and many published cases do not appear justly to fall within the category. Thorling[7] rejects Rolleston's suggestion that in the fully developed condition the mother is jaundiced, and throws doubt on many cases accepted by him.* Of cases accepted by both authors are, among others, those of Auden[8] and of Busfield[9]—both striking instances. Auden describes "a series of fatal cases of jaundice in the new-born occurring in successive pregnancies." Out of 15 pregnancies there were four survivors—the majority of the children dying, jaundiced, within a few days of birth. Some, however, lived a few months, but none except the four survivors lived longer than eight months. In both this series and that of Busfield the pregnancies followed one another in quick succession and in both cases the first child was not affected. Busfield noted that with succeeding pregnancies there was greater tendency to early death of the infant. Auden was of opinion that "the disease is an example of an acute toxæmia, due to some profound chemical disturbance, rather than to the products of a bacterial infection."

Before and since that time various other theories have been advanced, but still we have no proof. An interesting post-mortem fact noted in many cases, but not in all, is the jaundiced condition of the basal ganglia of the brain, due to necrotic changes giving rise to imbibition of bile-pigment.

A Case of Grave Familial Jaundice.

At present we have little knowledge of the intra-uterine and labour conditions in these cases, and the following case is published as an additional item of information:—

Mrs. X. is one of a family of eight brothers and sisters. Her father died of cancer at the age of 59, and her mother died of influenzal pneumonia at the age of 69. She was the seventh child in the family and was born nine years before her father's death—while he was in good health. Of her four brothers, one was stillborn (the fourth child), one died, aged 15 years, of pneumonia, one is in good health and unmarried, and one is in good health, married, but has no children. She has three sisters. The eldest was slightly jaundiced at birth. She enjoys good health, is married and has one son, aged 17, in robust health. She has had no subsequent child and no miscarriage. The second sister also enjoys good health and is married. She has two children—a boy, aged 13 years, who has always been well, and a girl, aged 8 years, who is also well, but was severely jaundiced at birth. The third sister suffers from indifferent health. She is married but has no children. Her condition is ascribed to "chronic constipation, possible appendix trouble, toxæmia." She has had various forms of treatment, including vaccines and thyroid extract.

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* Blomfield: Brit. Med. Jour., 1901, i., 1143; Arkwright: Edin. Med. Jour., 1902, 12; Duguid: Brit. Med. Jour., 1906, i., 319; Nason: Brit. Med. Jour., 1910, i., 989; Tylecote: Med. Chron., 1914, 58.

Mrs. X. herself was born in 1891 and was normal at birth. During early childhood she enjoyed fair health and suffered from scarlet fever, "slight dysentery," and German measles. During later girlhood her health was indifferent, but she was seldom unable to carry out the day's duties. She suffered from mumps, varicella, and "lack of vitality," and received medical treatment and spinal massage for neurasthenia. She was married in 1915 when aged 24½ years.

Mr. X. is one of a family of six brothers and sisters and is the youngest of the family by seven years. At his birth his father was aged 45 and his mother 41. His father died aged 83 of old age, and his mother, aged 72, of cerebral hæmorrhage. One brother died in infancy, two are well and unmarried, and one is well and married, with three children (girls, all alive and healthy). His sister is strong, married, and has five healthy children, all girls. He was born in 1885, prematurely. He enjoyed a robust, athletic boyhood and manhood, and at his marriage in 1915 was aged 30½ years. He served with the infantry in France from January, 1916, till April, 1919, and suffered slightly from D.A.H., due to gas poisoning and strain. He was passed for insurance as a first-class life in June, 1922.

After marriage Mrs. X. appeared well, had a good appetite, and slept well, but lacked energy and felt cold severely. She was frequently worried and depressed, lacked confidence, and disliked being alone. She suffered from marked constipation, to relieve which constant medicinal treatment was necessary. The constipation steadily increased in severity after the birth of her first child in 1916 and was treated by one of us (W. G. M.) by means of paraffin, phenolphthalein, cascara, and mag. sulph. In April, 1920, she suffered from influenza. She has given birth to four children, and in all four pregnancies has been very free from morning sickness, and has had no albuminuria.

First Child.—Male, born Oct. 1st, 1916. Labour normal, conducted by one of us (W. G. M.) under scopolamine and morphine. The infant was healthy and there was slight jaundice after birth. He is alive and has always been exceptionally strong and healthy.

Second Child.—Female, born Sept. 28th, 1920. The labour was normal under scopolamine and morphine (W. G. M.). Liver large at birth, extending to below the umbilicus. No enlargement of spleen. Jaundice developed very shortly after birth, and increased in severity till fourth week. Baby nursed at breast for four weeks, and thereafter fed with glaxo. The jaundice after this somewhat decreased. The whole time, however, the baby took food very badly ; much distension of intestines. Motions small and latterly constipated. Bile present in fæces, and absent in urine. No vomiting or hæmorrhage. Baby very sleepy and dazed, and gradually became more comatose. Died when aged 2 months, and was seen by one of us (A. D. F.) the day prior to death. At this time she was deeply jaundiced and so comatose that she was unable to swallow and was fed by a stomach-tube. She had a peculiar, cretinoid appearance, no hæmorrhages, and such marked abdominal distension that palpation revealed nothing but great intestinal distension—almost certainly of the small intestine. A blood film threw no light upon the case. To clear up the diagnosis of the case a Wassermann test was suggested, but could not be obtained. Intimate family history was, however, known and strongly negatived a specific cause. At this time the possibility of the diagnosis of congenital family jaundice was discussed but discarded, because, although the jaundice had recently improved, the baby's general health had become progressively worse. The improvement in the jaundiced condition was possibly due to weaning. Unfortunately no post-mortem examination could be obtained.

Third Child.—Female, born Feb. 15th, 1922. Labour normal under scopolamine and morphine (W. G. M.). Baby deeply jaundiced ; great enlargement of liver and spleen. No hæmorrhages. Baby well nourished. A blood film showed large numbers of basophile cells. She died when 1 day old.

Post-mortem Examination.—This examination was carried out by Dr. L. S. Ashcroft the following day. He reported as follows: "There were no obvious naked-eye lesions present anywhere, except a very enlarged liver and also a large spleen, which otherwise showed no macroscopical lesions. I could not find any congenital abnormalities present in any organ. I took some of the liver, spleen, pancreas, and thymus for section work, and also some of the heart's blood. The heart's blood was negative for a Wassermann reaction, and in none of the sections could I detect any spirochætes, nor was there anything histologically suggesting syphilis. Further there was no suggestion of an inflammatory condition."

Microscopical Examination.—Prof. E. Glynn examined and reported as follows on the section of liver: "Report on one section of liver, stained with hæmatoxylin and eosin and showing a considerable amount of post-mortem change. The appearances are remarkable owing to: (*a*) the presence of only about one-third the normal number of hepatic cells—the survivors are arranged in small isolated masses and slender columns (see Special Plate); (*b*) the presence of large numbers of nucleated cells lying between the surviving hepatic cells. All parts of the lobule are about equally affected by these changes. The epithelial cells are distorted and often very narrow from degeneration or from atrophy—partly pressure atrophy. The cytoplasm of many shows evidence of fat of the 'degenerative infiltration' type, for the vacuoles are very fine, and the nuclei, when present, are central. The erythrocytes in the two hepatic arteries present in the section are perfectly preserved, but those in the hepatic and portal veins have almost completely hæmolysed—evidently from intestinal toxins developing post mortem. The sinusoids show a great increase in the number of nucleated cells, but owing to the difficulty of recognising the endothelial or Kupfer cells which partly line the sinusoids, it is impossible to state what proportion of these nucleated cells are inside or outside the sinusoids. The majority of the nucleated cells are probably lymphoidocytes—i.e., the primitive blood-cell from which myeloblasts, lymphoblasts, and erythroblasts develop. A large number of erythroblasts are certainly present, for many of the cells have a round deep blue staining nucleus to which are attached fragments of homogeneous red cytoplasm. The blood in both the hepatic arteries shows an increase in the number of nucleated cells ; many are certainly erythroblasts. The bile-ducts are normal ; the bile canaliculi cannot be seen ; apparently bile-pigment is absent. There is a slight cellular infiltration of Glisson's capsule, but no fibrosis in them or in other parts of the liver.

"*Comments.*—Formerly most of the nucleated cells in the sinusoids and hepatic artery would probably have been regarded as lymphocytes and the pathological condition classified as fœtal leukæmia (see Reuss, loc. cit., p. 330). It is, however, almost certainly one of 'erythroblastosis.' In other words, the vascular areas, or 'herde,' of blood formation producing erythroblasts, myeloblasts, &c., which are normally present in fœtal life have not only *persisted*—as they usually do till shortly after birth—but have also *enlarged* and become diffused throughout the liver lobule. Erythroblastosis is always associated with enlargement of the spleen and liver, which was observed in this case.

"The histological appearances of this section resemble those seen in the liver of a 37 weeks' old macerated and jaundiced fœtus, described by Dr. N. B. Capon in an interesting paper on 'General Œdema of the Fœtus' (Jour. Obstet. and Gynæcol. Brit. Emp., 1922, vol. xxix., No. 2, Case 8). Here, as in the case under discussion, there was no œdema. In erythroblastosis, as Capon points out, the fœtus responds to an 'impairment of nutrition' by an increase in blood formation. The section described here throws no light on the cause of the impaired nutrition, nor on the cause of the jaundice."

Fourth Child.—In the beginning of October, 1922, Mrs. X. again found herself pregnant. She was in good health, but both she and her husband were much perturbed since a clear diagnosis of grave familial jaundice had been explained to them with a very guarded prognosis as to the probable condition of future children. She at once agreed to submit to detailed examination with a view to treatment during pregnancy. Thorough clinical examination by one of us (W. G. M.) showed her to be in sound health, active, and energetic, but to suffer still from marked constipation. Dr. Ashcroft, on Oct. 13th, examined the blood Wassermann reaction, which he found completely negative. He also examined a catheter specimen of urine. This showed, in the centrifuged deposit, "a few bladder cells, no renal cells, no renal casts ; no red blood cells ; no pus cells. Culturally: *Staphylococcus albus* only (most probably saprophytic or possible contamination)." Dr. R. Coope's report (Oct. 16th, 1922) was as follows:—

"Blood: Coagulation-time normal ; fragility of red blood corpuscles normal ; Van den Bergh's test for bilirubin completely negative. By Folin and Wu's method—sugar (three hours after a mixed meal), 105 mg. per 100 c.cm. ; non-protein nitrogen (on simple mixed diet), 26 mg. per 100 c.cm. Red blood corpuscles, 4,300,000 ; white blood corpuscles 6800 (polymorphs 70 per cent., large lymphocytes 8 per cent., small lymphocytes 21 per cent., eosinophiles 1 per cent.) ; hæmoglobin 79 per cent.

"Stools: Nothing abnormal found (either in stools of a milk régime or those of a controlled test diet).

"Urine: Sugar, blood, bile pigments and bile salts, and acetone bodies absent. Urobilin, no excess. Albumin, slight amount. Indoxyl, markedly excessive. Titratable acid, 18 c.cm. decinormal soda. Total nitrogen, 0·66 g. per cent. Ammonia, 27·2 mg. per cent. Urea, 1·41 g. per cent. Ammonia ratio 4·1 per cent. Diastase, 6 units. Deposit: The catheter specimen showed no pus cells or bacilli but a few hyaline and hyalo-granular casts. The first (24-hourly) specimen which I examined showed quite a fair number of casts—hyaline, hyalo-granular, and definitely granular casts. A third specimen (morning specimen) also showed casts, though not quite so numerous as in the 24-hourly specimen. Urea-concentration test (hypobromite method): First hour after 15 gm. urea ingested, 4·5 per cent.; second hour, 5·0 per cent.; third hour, 5·2 per cent.

"The positive findings are these: slight but appreciable albuminuria, granular casts. The blood non-protein nitrogen is not higher than normal, even for pregnancy (Folin and Wu's whole-blood method used). Urea concentration is very good. It looks, therefore, as though there has been, or is, a small renal lesion, but no obvious impairment of renal function, even when the strain of 15 g. of urea is imposed upon the kidney."

She was also examined by a gynæcologist (Dr. Leith Murray), who reported on Oct. 10th: "I find her both by history and by examination 12 weeks pregnant. Bi-manual examination discloses no abnormal feature."

With such data to hand she consulted Dr. Robert Hutchison as to her régime during pregnancy. With a view to preventing intestinal toxæmia he recommended a lacto-vegetarian diet, advised the use of senna pods as a laxative, and also calomel, gr. 1/20, twice or three times daily. Acting on this advice, she passed through an uneventful pregnancy and on April 20th, 1923, a baby boy was born at full term. Scopolamine and morphine were used during labour and the baby weighed 8 lb. at birth and appeared perfectly healthy. He has shown no sign of jaundice, was reared on the bottle (cow's milk mixture), throve extremely well, and is now aged 6 months, weighs 14 lb. 11 oz., and is 26 in. in length.

We are greatly indebted to Drs. Ashcroft and Coope, Prof. Glynn, and Drs. Hutchison and Murray for permission to publish their reports.

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SURGICAL TUBERCULOSIS IN EGYPT.

AN ANALYSIS OF 2500 CASES.

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THE incidence of bone and joint and gland tuberculosis in Egypt differs essentially from that in England to-day. Among the fellaheen or country people, and also among the urban population of Egypt, the flat bones, the bones of the skull and face, the sternum, scapulæ and ribs, the spine and ilium, and the small bones of the hands and feet are chiefly affected. The long bones and the big joints are not so commonly involved.

We have concluded an analysis of 2500 cases of surgical tuberculosis that have attended the out-patient department or been admitted to the surgical wards of Kasr-el-Ainy Hospital within the last three years. Of these, 1197 have been cases of tuberculous glands, 804 cases of tuberculosis of the flat bones, 159 cases of tuberculous peritonitis, and only 340 of the long bones and the big joints.

Source of Tuberculosis in Egypt.

It is not easy to find the source of tuberculosis in Egypt. The experience of the Government abattoirs, where a rigorous inspection of animals and meat is held, shows that cows and bulls are becoming more commonly affected. The published statistics of the Cairo abattoir have increased from 625 cases of tuberculosis in 1914 to 1807 in 1917. The best grades of beef are far too expensive for the poor of Cairo. The cows of the country are very susceptible to tuberculosis. No less than 43 per cent. of the Domain cattle, the best and best cared for cattle in Egypt, responded to the tuberculin test. The slaughter-houses of Cairo and Alexandria find that 5·2 per cent. of all animals are infected. Swine flesh, in a Moslem country, can, of course, be disregarded as a source of infection. The gamoose or buffalo, the poor man's cow in Egypt, is relatively immune to tubercle, as it is to cattle plague. Cow's milk is more expensive than buffalo's milk, and is almost entirely kept for European consumption; this, in spite of the fact that buffalo's milk is richer in fats and in casein. The milk of the poor is practically free from disease, as is his meat. The expensive bull or cow-beef is also kept for European consumption. The sheep and goat that are the common sources of the poor man's meat-supply —though the fellaheen eat meat once only in the week as a rule—are not susceptible to, or indeed infected by, tubercle in Egypt. It is in all probability the bad quality and health of the animal that is eaten rather than the susceptibility of that animal to tubercle that are the important factors. The buffalo, cow, and camel are practically never eaten by the poor unless they are sick and obviously unlikely to recover their usefulness for purposes of work or profit, and the camel is now very susceptible to tuberculosis.

There is, however, a source of surgical tuberculosis that has not yet been sufficiently explored in Egypt. Avian tuberculosis affects both pigeons and chickens. In fact, fowls are particularly prone to disease of all kinds in Egypt, to fowl plague and fowl cholera, though the incidence of actual fowl tuberculosis has not yet been fully worked out. The fellaheen, eating as they do from the mud floors of their huts, are most likely to contaminate their food with droppings of fowls which inhabit the same huts. It is the urban populations in Egypt rather than the fellaheen among whom surgical tuberculosis is the greater scourge. In this respect the incidence of disease is similar to that of Europe. It is probably to the poor quality and possibly infected nature of the meat-supply, and the great inrush of non-immune fellaheen from the villages into the now rapidly swollen towns, that we can attribute the great and rapid increase in the incidence of tuberculosis of bones and joints and glands in Egypt.

Incidence of the Disease.

Tuberculosis in general, and surgical tuberculosis in particular, is the greatest scourge in the whole country. It is the great killing disease where bilharziasis and ankylostomiasis are the great disabling diseases in Egypt. The Soudanese, with woolly hair and coal-black skins, are particularly predisposed to this disease in comparison with the Egyptian, who is a brown man with flat black hair.[1] Thirty years ago, before the improved means of sea communication brought the invalids of the world to Egypt, tuberculosis, both pulmonary and surgical, was a comparatively rare disease in Egypt. This is the experience of all the old practitioners of that time.

Immunity to Tuberculosis, Past and Present.

Tuberculosis appears to have the characters of a new disease in modern Egypt, and the population seems to have little acquired immunity to the disease. And yet if it is new to-day it was not always new. The bones of Predynastic, Dynastic, and Ptolemaic Egypt present the most marked evidences of this disease, as indeed they do of rickets, achondroplasia, and osteomyelitis. But of syphilitic diseases of bone there is not one authentic specimen. The history of Egypt presents an alternating series of great civilisations and greater catastrophes. There are the enormous urban populations like those of Memphis and of Thebes, and the periods when these civilisations were destroyed and dispersed by the invading armies that have swept Egypt from time to time in her past history. Then the population, perforce, turned to agriculture. In these alternating periods of agricultural and crowded urban populations the incidence of tuberculous disease in the bones exhumed from the graves of the various Dynastics seems to vary.[2] During the agricultural eras we find evidences of disease of the long bones and big joints such as the knee or hip; in the eras of industrial activity and the crowded life of the enormous cities of ancient Egypt we find tuberculous caries of the flat bones, the spine, the ribs, and the ilium. So marked a scourge was surgical tuberculosis in ancient Egypt that the crowded life of cities, in the rabbit warrens of mud houses as we know them to have been in those days, could hardly have been possible unless an acquired immunity to the disease had been developed. In the agricultural eras this immunity broke down. This evidence from the past, and the incidence of surgical tuberculosis to-day when the population is increasing and large industrial populations are developing, suggests that tuberculosis of the long bones and the big joints is the result of infection by a strain of tubercle bacilli of attenuated virulence in a race that has gained its immunity; whereas the type of disease attacking the flat bones is of a new and exalted virulence in subjects with no acquired immunity.

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[1] Madden: The Surgery of Egypt.

The *mortality* of this disease in Cairo and all the cities of Egypt to-day is very great. Among the poor urban population the death-rate is 80 per cent. in the case of gross tuberculous disease of bone with abscess and mixed infection. Even in hospital, where good food and fresh air and adequate surgical treatment are available, our experience is little different.

The *course* of the disease is very rapid; quick abscess formation and marked deformity are the rule. Mixed infection inevitably takes place, owing to the common practice of incision and drainage of the abscess instead of aspiration. As a rule the disease takes about 18 months to kill, and the end is usually from a green infective diarrhœa. Meningitis is comparatively rare as a terminal manifestation of the disease.

There are no complete official *statistics* of the disease. Hospital admissions show a greater preponderance of tuberculous disease of hip or knee or spine than in out-patients; but this is because they are of necessity bedridden cases. But if one compares the numbers of new cases of Pott's disease of the spine alone that come to out-patients every afternoon with the number of adult hunchbacks to be seen in the streets it is sufficient to carry conviction. An adult with Pott's deformity is rare in Cairo; but new cases of children with recent disease of the spine attend every afternoon.

In regard to the sharp line that can be drawn elsewhere between pulmonary and surgical tuberculosis, we have the same experience in Egypt of gross disease of the spine with unaffected lungs, and advanced pulmonary tuberculosis of the apices of the lung without involvement of the lymphatic glands of the neck.

Treatment.

The treatment of surgical tuberculosis in Egypt is very unsatisfactory. There are two surgeries in Egypt, the surgery of the poor and the surgery of the rich. For the latter there are institutional treatment, hygienic and dietetic aids, and the same conservative operations and orthopædic apparatus, designed from the point of view of restoration of function, as in Europe. But for the poor there are in general no sanatoria, no orthopædic apparatus, and only a few possible conservative operations upon joints. Spinal caries and big-joint affections with abscess formation, in which plaster and repeated aspiration fail and, especially, in which mixed infections subsequently develop, are usually hopeless. The best that we can hope for in a tuberculous knee or hip is a fixed joint. Amputation is far the safest and best functional operation in mixed infections in the limbs. Any temporising operation, such as the scraping of sinuses in tuberculous dactylitis, for instance, is commonly followed by recrudescence of the disease in other joints and other epiphyses. As a rule, plaster with a view to fixation in useful functional position in cases of pure disease of joints, or amputation in cases of mixed infection, is far the best. In the numerous class of cases where flexion-deformity exists, with active disease, treatment in plaster until ankylosis is firmly established and disease quiescent, is the only safe treatment to adopt. The deformity can subsequently be corrected by such straightening operations as subtrochanteric osteotomy.

For tuberculous caries of the spine in Egypt Albee's operation of bone grafting is an excellent procedure. From the point of view of function and stability nothing gives us so strong and rigid a spine as a bone graft. Our only alternatives are plaster jackets, which are seldom effective, and always intolerable, owing to the incredible number of vermin that collect beneath them, or orthopædic apparatus, for which there are no funds or Samaritan societies, and which have a definite market value to poor, and perhaps unscrupulous, parents. In this connexion, however, it is necessary to add that there are no more devoted parents in the world than in Egypt and in all Moslem countries, though their ignorance is often pitiable. In Albee's operation, however, the shock of the whole operation at one sitting is great, and our children are often so wasted by want of good food and by parasitic disease that we have adopted a method of performing this operation in two stages. The first consists of removal of the tibial graft and implantation in the cellular tissue of the abdominal wall; the second, after an interval of a week or ten days, of the implantation of the graft along the spinous processes.

Tuberculous glands of neck often show very promising results after treatment by X rays. Such is the common and extensive involvement of the glands in both triangles of the neck that operations, to be complete, are so mutilating and so frequently followed by recurrence as to prompt surgeons to abandon operation altogether.

Conclusions.

The conclusions at which we have arrived after the study of hospital cases, veterinary and abattoir statistics, are:—

(1) Tuberculosis, both surgical and pulmonary, is very greatly on the increase in Egypt.

(2) The type and incidence of surgical tuberculosis in the flat bones rather than in the classical long bones and joints suggest that we have here a recrudescence of the disease in a community that has lost its acquired immunity.

(3) The study of Predynastic, Dynastic, and Ptolemaic bones, extending to a period as far back as 3000 years B.C., proves that surgical tuberculosis was a disease of frequent incidence in those times. It also suggests that the type of disease affecting the flat bones developed when periods of urban civilisations succeeded periods of almost purely agricultural life in Egypt. Maceration and softening of mummified tissues, which have been successful in demonstrating certain infective organisms in Predynastic bodies, have not yet enabled us to demonstrate the tubercle bacillus. Work on this subject is still proceeding.

(4) The meat- and milk-supply of the poor in Egypt is obtained almost entirely from non-tuberculous sources such as the buffalo and goat, which are relatively immune to tubercle.

(5) Avian tuberculosis is probably a contributing cause of the incidence and development of this disease among the poor in Egypt.

(6) The development of the two-stage method of performing Albee's operation of bone grafting of the spine allows this procedure to be adopted even in young children.

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[2] Ruffer: The Palæo-pathology of Egypt.

THE
VACCINE TREATMENT OF OZÆNA.

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IN 1908 Perez discovered the coccobacillus of ozæna, and in his report considered it to be the pathogenic bacterium of that disease. In the same year Skillen and Holmes also discovered a similar bacillus, and prepared from it a polyvalent vaccine which they tried clinically. In 1913 Hofer and Kofler prepared a new vaccine from the Perez bacilli, and tried it on many ozæna patients; their results were reported to the German Society for Laryngeal Diseases. As stated recently, on the strength of my studies extending over several years, I became convinced that the causative agent of ozæna is the coccobacillus of Perez and Hofer, and that therefore a vaccine treatment by this bacterium is the most reasonable of all the ozæna treatments. Through the kind assistance of several specialists I have been enabled to employ the vaccine treatment in more than 70 instances since 1919. Unfortunately some of the patients failed to continue the injections for the requisite period, in other cases the records are incomplete, so that only 30 cases remain. Even so, the following report may be of interest, as it gives some idea of the treatment.

Preparation of Coccobacillus Vaccine and its Application.

Patients clinically diagnosed as sufferers from ozæna were examined bacteriologically, and a so-called autogenous vaccine was separately prepared for each patient, these vaccines being mono- or poly-valent according to the case, monovalent for simple, polyvalent for multiple infections.

The number of bacteria present in the vaccine is ascertained by counting, and sterilisation effected by heating after Wright's method. The number of bacteria contained in 1·0 c.cm. of vaccine is also ascertained.

In my first preparation I used a comparatively small number of bacteria; in subsequent experiments, however, I found that a larger dosage is well borne by the patients and is more effective. Accordingly the number of bacteria contained in the vaccine has been greatly increased.

	Number in millions of bacteria.	
	In first preparations.	In recent preparations.
Coccobacilli ..	.. 100	500
Gram-positive B...	.. 100	400
Staphylococci ..	.. 500	1000
Friedlaender's B...	.. 100	500
M. catarrhalis ..	.. 50	200

Dosage.—Of my recent preparations (with the increased number of bacteria) I have fixed the dosage for the first injection at 0·1 to 0·2 c.cm., containing: coccobacilli, 50 to 100 millions; Gram-positive B., 40 to 80 millions; staphylococci, 100 to 200 millions; Friedlaender's B., 50 to 100 millions; *M. catarrhalis*, 20 to 40 millions. The maximum dose is 1·0 c.cm., containing: coccobacilli, 500 millions; Gram-positive B., 400 millions; staphylococci, 1000 millions; Friedlaender's B., 500 millions; *M. catarrhalis*, 200 millions.

After the first injection the dose is to be increased by 0·1 to 0·3 c.cm. up to the maximum dose, which may be maintained, or the doses may be gradually decreased again to 0·6 to 0·8 c.cm., and then maintained at this latter figure.

As to the *place of injection*, the subcutaneous tissue of the outer part of the upper arm is preferable.

Reaction.—When the doses are gradually increased, as indicated above, there is almost no reaction, and even if the injected part should become red or swollen, this will subside soon.

The *interval between injections* should be three to four days during the period for small injections (up to 0·5 c.cm.), and five to seven days for 0·6 c.cm. or above.

Autogenous Vaccines Prepared.

The total number amounts to more than 75, but here I enumerate only those used in the cases considered in this report.

TABLE I.

Current number.	Species of vaccine.	Number of preparations.
1	Coccobacilli Gram-positive B. } Mixed.	13
2	Coccobacillus vaccine.	6
3	Coccobacilli Staphylococci } Mixed.	4
4	Gram-positive B. Staphylococci } Mixed.	3
5	Coccobacilli Gram-positive B. Staphylococci } Mixed.	1
6	Gram-positive B. *M. catarrhalis* Staphylococci } Mixed.	1
7	Gram-positive B. Friedlaender's B. } Mixed.	1
8	Gram-positive B.	1
	Total	30

Clinical Trial of Coccobacillus Vaccine.

As already stated, out of the total number of ozæna patients treated with the vaccine, there are only 30 whose records are complete. It would be of little interest to go into the details of each case, so I tabulate them briefly (Table II.). When going through the table it will be seen that among the 30 patients treated there were six who presented the ozæna symptoms, but whose autogenous vaccine contained no coccobacilli; these six cases should, of course, not be taken into account when determining the value of coccobacillus vaccine. Then there are 24 cases left which received either pure or combined coccobacillus vaccine—viz., 5 cases slightly improved (21 per cent.), 11 cases fairly improved (46 per cent.), 6 cases thoroughly recovered (25 per cent.), and 2 cases with no improvement (8 per cent.). The longer the injections are continued the better are the prospects of recovery.

Condition of Blood Corpuscles of Ozæna Patients and Immunised Rabbits.

I have always endeavoured to determine the changes, if any, in the condition of the blood corpuscles of the ozæna patient after he has undergone a prolonged course of treatment with coccobacillus vaccine, as compared with the state before treatment, because in this way certain facts might be secured for judging the effects of the treatment, or some otherwise helpful ideas might suggest themselves. I have also compared the condition of the red blood corpuscles of the rabbit immunised against the coccobacillus with that of the rabbit immunised against Gram-positive bacilli, and these two again with that of the normal rabbit. The result is summarised as follows:—

(1) The number of both the red and the white blood corpuscles of the ozæna patients is remarkably low, and though both show some increase in number after the injections, the difference is only slight. Also the relative percentage of the various kinds of white corpuscles remained the same, while the hæmoglobin generally decreased.

(2) In the rabbit immunised against the coccobacillus, and in the rabbit immunised against both the Gram-positive and Friedlaender's bacilli, there appeared an equal decrease in the number of both red and white corpuscles, but no change in the specific percentage of the white corpuscles, while the quantity of hæmoglobin decreased a little.

From the above we may deduce that, if the number of blood corpuscles of an ozæna patient has not increased after the injections, the number of injections has been insufficient; and when we see that in the case of rabbits highly immunised, and, as proved by animal tests, effectively immunised, there remains still a more or less considerable decrease in both elements, especially in the white corpuscles, we may infer that infection of man with Perez's bacillus is the cause of the decrease of the blood corpuscles.

TABLE II.

Number.	Patients.	Sex.	Age.	Time of inj.	Period in months.	Species of vaccine.	Symptoms before injection.			Symptoms after injection.		
							(i)	(ii)	(iii)	(i)	(ii)	(iii)
1	S.M.	M	17	9	2·5	B.G + S.C	†††	†††	†††	††	††	††
2	U.M.	M	18	11	3	C.C	†††	†††	†††	†	†	†
3	N.M.	M	19	16	4	S.C C.C	†††	†††	†††	†	†	†
4	F.W.	F	24	20	5	S.C C.C	†††	†††	†††	0	0	0
5	O.U.	M	19	8	2	B.G + S.C	†††	†††	†††	††	††	††
6	Y.Y.	F	33	17	4	B.G + C.C	†††	†††	†††	0	0	0
7	K.I.	M	27	5	1·5	B.G + S.C	†††	†††	†††	††	††	††
8	W.M.	M	20	10	3	C.C	†††	†††	†††	††	††	†
9	M.W.	F	38	7	2	B.G + C.C	†††	†††	†††	††	††	†
10	H.M.	M	19	9	2·5	B.G + C.C	†††	†††	†††	†	†	†
11	U.T.	M	16	17	4·5	B.G + C.C	†††	†††	†††	0	0	0
12	F.M.	M	16	14	3·5	B.G + C.C	†††	†††	†††	0	0	0
13	Y.T.	F	16	2	½	B.G + C.C	†††	†††	†††	†††	†††	†††
14	N.L.	M	22	10	2·5	B.G + C.C	†††	†††	†††	†	††	†
15	K.D.	M	28	10	2·5	C.C	†††	†††	†††	0	0	0
16	W.K.	M	25	10	2·5	B.G + C.C	†††	†††	†††	0	0	0
17	K.N.	M	20	2	½	B.G + C.C	†††	†††	†††	†††	†††	†††
18	M.S.	M	18	11	3	C.C	†††	†††	†††	††	†	0
19	F.S.	F	29	11	2	S.C B.G + C.C	†††	†††	†††	†	†	0
20	S.I.	F	16	9	2	B.G + C.C	†††	††	†	††	††	†
21	W.B.	M	17	14	3	C.C S.C B.G + F.D	†††	†††	†††	††	†	††
22	H.I.	F	20	12	3	C.C	†††	†††	0	†††	††	0
23	U.Z.	F	27	19	2	S.C C.C	†††	†††	†††	††	†	†
24	T.D.	F	27	9	2	C.C	†††	†††	†††	††	††	††
25	T.H.	M	38	8	2	C.C	†††	†††	†††	††	††	††
26	I.Y.	F	31	9	2	B.G + C.C	†††	†††	†††	††	††	††
27	K.Y.	M	24	11	2·5	B.G + C.C	†††	†††	†††	††	††	†
28	A.K.	M	14	4	1·5	B.G + C.C	†††	†††	†††	†††	††	††
29	S.Z.	M	57	7	1·5	B.G + M.C.	†††	†††	†††	†	††	†
30	M.N.	F	69	6	1·5	S.C B.G +	†††	†††	†††	†††	††	†

N.B.—(1) In the column for "Species of vaccine," B.G + signifies the Gram-positive bacilli, S.C the staphylococci, F.D the Friedlaender bacilli, M.C the *M. catarrhalis*, and C.C the coccobacilli.

(2) In the column for "Symptoms before (after) injection," (i) signifies the stinking secretion, (ii) the crusts, (iii) the nasopharyngeal exsiccation, ††† the highest degree, †† the medium degree, † the lowest degree, and 0 the absence resp. disappearance of the symptom.

Conclusion.

If we place together the experimental results obtained so far, we arrive at the following conclusions:—

1. As various diseases of the nasal passage present a close resemblance to ozæna, the effectiveness of the vaccine treatment of ozæna patients can only be determined by applying the autogenous vaccine produced from the bacteria carried by the patient himself, and after the species of such bacteria has been ascertained.

2. My bacteriological observations show that most ozæna patients suffer from a mixed infection by the coccobacillus and Gram-positive mucus-producing bacilli; therefore the application of mixed vaccine derived from these two kinds of bacteria appears reasonable.

3. Injections of coccobacillus vaccine and mixed vaccines are the most reasonable treatment of ozæna cases.

4. Ozæna patients generally show a decreased number of red and white corpuscles, and this condition does not change after vaccine treatment. In animal experiments likewise the red and white corpuscles of the rabbit immunised against coccobacillus show a considerable decrease.

In closing this report, I express my thanks to Dr. Minokichi Kurosu for his coöperation during my clinical trials, and to Dr. Kazuyoshi Asaba and Dr. Sadayemon Sasaki for the great help given in the experiments.

NOTE ON THE TREATMENT OF EPIDEMIC ENCEPHALITIS.

BY EDWIN MATTHEW, M.D., F.R.C.P. EDIN.,
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DURING the present spring and in that of 1923 I have had the opportunity of seeing and treating in private and in the wards of the Edinburgh Royal Infirmary under my charge over 20 cases of epidemic encephalitis. In many the usual features were present—cranial nerve palsies, nocturnal insomnia, and drowsiness during the day. Some, in addition, had the painful myoclonic contractions, and two marked choreo-athetotic movements. The treatment of the condition is admittedly unsatisfactory. Urotropin in large doses, Pregl's iodine solution, sod. cacodylate injections, with hyoscine hydrobromide as a palliative, have all been tried, sometimes with partial success.

For many years now I have employed intramuscular injections of magnesium sulphate in chorea with considerable success, and during the past two winters I have been observing its effects in epidemic encephalitis, and I think with better results than other suggested remedies. This is particularly so in the myoclonic and choreo-athetotic types. The myoclonic and choreo-athetotic types are often very severe, are very trying to the patient, and the muscular contractions are very painful, but with magnesium sulphate injections I have never failed to stop the contractions after a few doses. The last two cases admitted to my wards were typical.

One had myoclonic contractions, very severe over the whole abdominal wall, and less so in the lower limbs. After three injections the contractions entirely ceased and did not recur. The second case had severe choreo-athetotic movements affecting the whole body, which had been present for three days before admission. During the following three days the movements became, if possible, more trying. Magnesium sulphate was then given. A difference was observed after the first injection, and after three injections the movements had almost entirely ceased. In the ordinary cases with the cranial palsies, drowsiness, &c., benefit can also be observed. After four or five injections the temperature falls to normal and the patient is less drowsy, though the ocular palsies still remain.

This treatment with magnesium sulphate is, I think, worth a further trial. A 25 per cent. solution of magnesium sulphate is used and 4 c.cm. given at each injection. The second dose is given 12 hours after the first, and the third and subsequent doses, if required, at 24 hours' interval.

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A meeting of this Society was held at the rooms of the Medical Society of London on May 30th, Colonel L. W. Harrison, the President, being in the chair.

A discussion took place on the subject of

Epididymitis.

Mr. **Kenneth Walker** said that though the gonococcal was the form of epididymitis chiefly concerned, it would be necessary for him to refer to such other forms as those due to the tubercle bacillus, *B. coli*, and other pyogenic organisms. It was the general belief that infection of the epididymis from the urethra was effected through the lumen of the vas, the exciting cause being a wave of reversed peristalsis which drove infective material downwards towards the epididymis. He did not deny this, but was convinced that another route was open to the infecting organisms. In some experiments he made 14 years ago with *B. prodigiosus* he was able to prove that organisms could reach the epididymis from the urethra even after the vas had been tied and divided. The epididymis was infected 10 to 24 hours after inoculating the urethra, and the infection was not blood-borne, as blood cultures were always negative. Later work suggested that the organisms travelled along the lymphatics in the sheath of the vas. It was known that infection descended the cord, and that the chief producer of epididymitis was irritation of the posterior urethra, trauma of the latter, in his view, opening up the lymphatics to infection. A factor of equal importance in the production of epididymitis was direct trauma of the testis; there was often a history of the latter in the cases. He was sure that gonococci were often present in tissues without producing symptoms; and if they were in the epididymis even the trauma associated with exercise would suffice to precipitate epididymitis. During the war, epididymitis was most frequent where irrigation was carried out at too great a pressure and where it was the habit to place subjects of posterior urethritis on to fatigue duty.

Preventive treatment was very important, and all irritation of the posterior urethra must be avoided during the acute stages of the disease. The tendency of the present day was towards over-treatment and over-instrumentation. Rest was very important; the cases would be halved if all acute gonorrhœa cases were kept in bed. Failing this, patients should wear suspensory bandages and take a minimal amount of exercise. He had not found atropine or belladonna definitely helpful, though they should reduce peristalsis in the vas. To prevent epididymitis occurring after prostatectomy, many surgeons ligatured the vas at the neck of the scrotum. Some French urologists had advocated that for many years, and Mr. Clifford Morson in this country favoured the practice.

Diagnosis.—With regard to diagnosis, he said the common conditions from which a gonococcal epididymitis had to be distinguished were attacks which occurred secondary to urinary infections by other organisms, such as *B. coli*, acute attacks of epididymo-orchitis associated with blood infections, such as mumps and typhoid, and from tuberculous epididymitis. Epididymitis could complicate a staphylococcal prostatitis as easily as it could a gonococcal one. The differentiation of the gonococcal from the tuberculous condition was not always easy, especially as the method of spread was the same in both. In the majority of both tuberculous and gonococcal cases, a lesion of the prostate or vesicles could be detected by rectal examination. In 22 out of 24 cases of genital tuberculosis sent to him for examination he found signs of prostatitis or vesiculitis. In early days it might be necessary to wait for a certain diagnosis.

Treatment.—When the condition had developed, two objects were aimed at in treatment: (1) the relief of pain, (2) the hastening of resolution. A third, and important, one he regarded as the prevention of subsequent sterility. All inter-urethral treatment should cease and the patient be kept in bed, which he was usually glad of, owing to the acuteness of the pain. In some, the pain was felt along the cord rather than in the testicle itself, sometimes leading to the diagnosis of acute appendix, especially if vomiting also occurred. Hot fomentations, supported by hot baths and rubefacients might give sufficient relief, especially if backed up by morphia suppositories. The form of heat application he favoured was that by diathermy, the whole testicle enwrapped in a zinc sheet which had been well padded with lint soaked in saline. This treatment was applied daily. The pressure pain could be much reduced by puncturing the swollen epididymis with a hypodermic needle, drawing off a little blood-stained serum. Americans favoured doing more: opening the tunica vaginalis and incising the swollen epididymis. Owing to the danger of dividing the epididymal canal, resulting in stricture and sterility, he did not approve of this more heroic measure.

Epididymitis and Sterility.—Mr. Walker said it was probable that gonorrhœa was responsible for at least 40 per cent. of all barren marriages, and if sterility in the male alone were taken, the figure would be even higher. Of 30 husbands sent to him by gynæcologists, he found seven cases of azoöspermia, three of which were the result of previous gonococcal epididymitis, two of mumps. When epididymitis was bilateral, the chances of sterility were very great. Cunningham and Cook (in America) found that out of 22 patients upon whom they had performed double epididymectomy, 12 subsequently showed spermatozoa in their semen; in five they were absent. No examination of the semen was made in the case of the remaining five. Finger, following the expectant treatment, found that 207 out of 242 cases of gonococcal epididymitis suffered subsequently from azoöspermia. Thus incision of the inflamed epididymis seemed to lessen the risk of sterility.

Discussion.

Major A. T. **Frost** confirmed what Mr. Kenneth Walker said as to the method of direct infection. He had been looking into the records of over 300 cases and had been struck by the fact that the urethra never showed a posterior infection. In the army a crop of epididymitis cases in the winter usually meant that there was a football team, and strenuous games were played. The sudden exertion caused either injury or a reflex disturbance which spread the disease up the vas. In the army it was rare for a case of epididymis to last beyond ten days, though slight enlargement of the organ might be left longer. Little was done for it except resting the patient in bed and injecting sulpharsenol, though he did not regard the latter as a specific. It had no effect when the patient was at his worst, but was useful on the upward rise and when the infection was clearing up. It was an excellent analgesic. Secondary infection, mostly streptococcic, probably found its way in by irrigation. He relied on vaccine-therapy as much as ever, and a combination of this with sulpharsenol he regarded as the best non-drastic method of attacking the disease.

Mr. **Claude Mills** said cases did best which were put on to vaccines as a routine measure. Patients should wear a suspensory bandage from the date the gonorrhœa started; it lessened the risk of subsequent epididymitis. Often the fluid in the tunica vaginalis contained gonococci, though the patient might have no symptoms of epididymitis, showing, he thought, that the gonococci probably got through the lymphatics.

Captain **Carminow Doble** said he had found atropine very helpful in epididymitis, and the same was true in his experience of sulpharsenol.

Major **Dawson** was able amply to confirm the statement as to the harmful effects of football in these cases of gonorrhœa in producing epididymitis, for in certain hospitals in France during the war there was a high epididymitis rate, but it came down at once when football was stopped.

Mr. H. M. **Hanschell** spoke of the good effect of simple rest in bed and the keeping up of gentle warmth, such as by the application of thermogene wool. The two-glass urine test he did not regard as of real value as showing posterior urethritis, unless it was so severe that there was a coincident cystitis.

Dr. B. B. **Sharp** referred to a case of what appeared to be anterior urethritis, which, after washing out until the fluid became clear, and the prostate and vesicles seemed normal, was regarded as cured. Three days later the patient slipped in his bath and injured his testicles, and when next seen by the speaker, after having rested in bed, the man had posterior urethritis. Possibly the infection had spread via the lymphatics from the anterior urethra to the epididymis, and the posterior urethra had been infected from the epididymis and perhaps by lymphatics.

Mr. E. R. T. **Clarkson** said that although this was not an ethical society, there was one feature of the discussion which he would like to ventilate. It was as to whether, when consulting his medical adviser and found by him to have dual epididymitis, such a patient should, without putting the question, be informed that there was a danger that he might be sterile in marriage, and that a prospective wife should therefore be advised as to that possibility. Did the meeting agree with him that the subject was sufficiently important, as regards both parties, for that course to be justified ? To allow the prospective wife to enter into a union with such a man in ignorance seemed scarcely to be " playing the game." If such a man did marry, without himself knowing he was liable to be sterile, he could, it seemed, justly feel he had a moral claim against his medical adviser for not having done his duty in this respect. If the patient asked his doctor the direct question, the course was clear and the matter much simplified.

Mr. C. **Mills** said it was his view that the medical man should in every such case point out the danger of sterility, whether directly asked by the patient or not. It would not be fair to allow such a man to enter into marriage blind as to the likely consequences.

Dr. J. **Donald** spoke of the kind of cases in which the infection seemed to have been via the lymphatics, not from the posterior urethra.

Dr. M. **Korn** referred to a series of cases which were treated at London Hospital, under Mr. H. Lett, by the injection of contramine for epididymo-orchitis. There was definite benefit from this method, for they recovered in about a fortnight, or in half the time compared with the cases in which it was not used. He had found that a prolific cause of epididymitis was the use by the patient of strong solutions of such fluids as permanganate.

The **President** was particularly interested in the question of trauma of the urethra and of the testicle in the matter of the prevention of epididymitis. During the war he had a unique opportunity of definitely associating a high onset of the condition with the playing of football, or the use of ungentle methods of treatment, such as having a strong head of fluid from placing the irrigation apparatus at too great a height ; also vigorous or too early massage of the prostate. He fully supported what Mr. Kenneth Walker said in regard to the usefulness of diathermy in the disease. He did not think one could be sure there was no pus in the posterior urethra, even after getting clear urine from the washing out, unless centrifugalising was carried out. With regard to the use of atropine, he related a case with very severe relapsing urethritis, with hard prostate and vesicles, which had immediate testicular swelling when manipulation was attempted, but the use of atropine the night before intended treatment enabled manipulation to be carried out without enlargement of the testicles.—Mr. **Kenneth Walker** briefly replied.

The Question of Neuro-Recurrence after Arsenobenzol Treatment.

The **President** gave a statement on the male cases of syphilis at the St. Thomas's Hospital V.D. centre, numbering 2638. In this number the cases with clinical symptoms of syphilis of the central nervous system were 168 (including 123 of tabes, 12 of general paresis, 6 of tabo-paresis). Of the 168, five had previously had arsenobenzol treatment, prior to the onset of the nerve symptoms, and he gave the details of these, which showed that only one patient had received the intensive course which was employed at the military hospitals during the war.

Gonococcal Infection from Sebaceous Follicle to Prepuce.

Mr. C. **Mills** showed a young man who, a week after exposure to infection, had a small " blind pimple " on the skin of his prepuce, and three days later had a second of these lesions, the skin being intact over both. There was no urethral discharge. The follicles were opened, and, as a routine, slides were made of the pus, which yielded pure gonococci. The urethra remained sterile.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

A **meeting** of the Surgical Section was held on May 23rd, Mr. R. A. **Stoney** being in the chair.

Mr. W. **Pearson** showed a case of

Atrophic Dermatitis Following " Trench Feet "

treated by periarterial sympathectomy. He said that this condition was a rare sequel to trench feet ; this was the second case he had seen. The trouble had started in 1915 with swelling and pain in the feet, since then there had been recurring attacks of vesication of the dorsum of the feet associated with coldness and tingling. He had performed periarterial sympathectomy over three weeks ago, and so far the patient had greatly improved, but it was too early yet to know whether a cure had been effected. The patient said his feet had been quite warm since the operation, and he had not any vesication. It was a very simple operation to do. In the other case which Mr. Pearson had seen the patient had had a great deal of local treatment without benefit, and so he came to the conclusion that surgery was the only possible chance. A dermatologist who was consulted called the condition atrophic dermatitis, and said it was a condition resembling X ray burns, being very unresponsive to treatment. Mr. Pearson had operated and the patient was completely cured.

The **President** thought that Leriche's operation would be of great help in many cases, as it was apparently a possible cure for such conditions.—Mr. H. **Stokes** suggested the applicability of this operation to chronic ulcers.—Mr. **Pearson**, in replying, said that Leriche's operation was at first advocated not for vascular conditions, but for reflex contractions and paralysis, in which the wounds occurred in the neighbourhood of large blood-vessels and nerves. He personally did not think that the operation would cure such cases. It had been used with benefit in the treatment of callous ulcers.

Mr. A. K. **Henry** read a note on an investigation of a

Mechanism of Sudden Death in Cerebral Tumours,

illustrated with lantern slides. He dealt in particular with tumours of the posterior fossa, giving rise to increased intracranial pressure. It had been known for nearly a century that when intracranial pressure was increased the brain tended to herniate through all possible openings. Notable among these was the foramen magnum, and the hernia here consisted of the part of the cerebellum known as the tonsils and portions of the biventral lobes. In two of Cushing's cases the hernia, which he called the foraminal pressure cone, reached the level of the posterior arch of the atlas and compressed the medulla. The patient's life was saved in each case by resection of the arch. The fact of herniation and its results were beyond question. Mr. Henry had investigated the mechanism which allowed this hernia to occur in the hope that its comprehension might suggest means of preventing its calamitous effects. He had noted himself, and it had been noted by others, that death might occur in these cases when they sat up. The patient, feeling comfortable and well in the recumbent position, sat up in bed and fell forward dead as if he had been shot. He drew attention to the fact that the act of rising from the recumbent posture was begun by bending the head forwards. His conclusions were based on two simple observations and experiments. First, if one looked in the dissecting-room at the floor of the skull, after the skull cap and brain had been removed, while the cord and spinal canal were still intact, and, if one moved the head and neck backwards and forwards, the cord worked like a piston in the upper part of the spinal canal. When the parts were flexed forward the cord appeared to retire down the canal; when the head and neck were bent back the cord tended to project up through the foramen magnum. What really happened was that the cord was like a stationary piston, while the canal moved and shortened over it. When, however, the cord had not been cut and the brain was in position, the superimposed brain-stem prevented the upward projection of the cord at the foramen magnum, and its progress being checked, the cervical portion of the cord became sinuous. At the same time the brain-stem, which in the forward position of the head and neck was closely applied to the floor of the skull and, what was more important, to the odontoid process, moved when the parts were extended slightly back from the skull floor and the odontoid tip. If a sagittal section of the head were made in the cadaver, any pressure with the thumb in an outward direction upon the cut surface of the cerebellum, when the head was bent forwards, forced the brain-stem against the odontoid and the floor of the skull; when the head and neck were retroflexed it was impossible in the normal subject to force the brain-stem by this means into the same close contact with the bones. When the head and neck were flexed forward the most caudal part of the cerebellum lay directly over a space shaped like a funnel. This space, which was the cisterna magna, was largest when the head was bent forward and left most room for cerebellar hernia. When the head and neck were thrown back the size of the cisterna magna was disminished. The caudal part of the cerebellum was no longer poised over the opening of the foramen magnum, but lay over the atlas arch. The second observation was that if the brain was removed from a cadaver, the cord and spinal canal being left intact, and if water was poured through the foramen magnum until the spinal subarachnoid space was full, backward movement of the head and neck caused the level of the fluid to rise into the skull, while with forward flexion the water level fell. This meant that when the head and neck were forward the capacity of the subarachnoid space was increased in the spinal canal. If this occurred suddenly in a case where the pressure in the posterior cranial fossa was high, the potential vacuum formed below the cerebellum at the moment when it was poised directly over the foramen magnum would favour its prolapse. Subtraction of fluid by lumbar puncture was notoriously dangerous in cases of tumour of the posterior cranial fossa. The mechanism considered suggested that the position of the patient's head and neck during and after these interventions might determine his survival or death. Mr. Henry discussed the prevention of sudden death in the light of his findings.

Discussion.

The PRESIDENT said that they had all been aware for a long time of the danger of lumbar puncture in cases of increased intracranial pressure, and Mr. Henry had now explained how that danger arose. He would like to know, however, if Mr. Henry thought that death was due to direct injury of the anterior surface of the medulla or to injury to the cerebellum behind.—Dr. J. SPEARES said he had seen one case of cerebral tumour in which sudden death had occurred, and he thought Mr. Henry's ideas might explain the accident which had happened. He regretted that Mr. Henry had not discussed the reason why such patients got increased intracranial pressure, and why small tumours give rise to increased intracranial pressure. He wondered if a frontal tumour would produce the same result as Mr. Henry had described.—Mr. PEARSON said he thought one was rather apt to forget the effect which the dura septa had in dividing the skull into different parts.—Mr. HENRY, in replying, said that any œdema which occurred round the tumour would help herniation very much, but why a small tumour should cause increased intracranial pressure it was hard to say, unless it had an irritative action. Many tumours caused focal symptoms, without causing actual destruction of the brain, and if the pressure were evenly distributed through the brain it was very hard to say why in these cases focal symptoms were found.

Mr. SETON PRINGLE read a paper on

Aseptic Resection of the Colon.

He first reviewed the work which had been done on this subject, describing the methods which Halstead, Highsmith, Schoemaker, and Fraser had employed. Mr. Pringle's method differs only in details from those of Highsmith and Fraser. When the bowel has been mobilised and the vessels ligatured, he applies a large crushing clamp with blades one inch wide to the intestine at the point above the growth selected for division. He then places a narrow fine forceps on the crushed portion close up to the end which is subsequently to be anastomosed. He treats the gut below the growth in a similar manner, and, on proceeding to carry out the anastomosis, the two fine clamps are approximated and the ends of the intestine united by mattress sutures, the clamps being left in position and thus controlling the bowel until the encircling line of suture is almost completed. He claimed that in this way there was less risk of infection occurring than in any of the methods previously described, and, also, that the internal shelf, or partial diaphragm left in all these operations, is less following his method. He had carried out the operation described in three cases of partial colectomy for cancer, and each made an excellent recovery without the slightest sign of local or general infection.

The PRESIDENT said that although Mr. Pringle's conception of performing colectomy without exposing the opening of the bowel during the operation was not original, his method was superior to any methods previously described. It was apparently very simple and required no special instruments. It was important to note that the intestine was divided through the crushed portion, so that there was no need to interfere with the mucous membrane. If the needle once went into the interior of the bowel the whole operation was wasted, but by Mr. Pringle's method this could not occur. He asked if Mr. Pringle had experienced any difficulty in performing the operation in cases where it had been necessary to join the small intestine to the large intestine.—Dr. D. K. MILNE-HENRY described a special form of ligature which she employed in these cases.—Mr. PEARSON asked whether Mr. Pringle had ever experienced any difficulty in withdrawing the forceps, or if they slipped off easily.—Mr. A. K. HENRY said that the diaphragm in Mr. Pringle's method was reduced to the smallest possible terms. He referred to the danger of crushing clamps cutting the bowel; he knew of four cases in which death had occurred owing to this.—Mr. A. CHANCE said that he had adopted Mr. Pringle's method. The application of the fine closing clamps required to be very accurate, it must go down just to the junction of the gut with the mesentery so as to close the opening, and yet no further. It was necessary to take a very wide bite of gut on either side to cover the clamp ends.

Mr. PRINGLE briefly replied.

Reviews and Notices of Books.

A Text-book of Pharmacology and Therapeutics.

Or the Action of Drugs in Health and Disease. Eighth edition, thoroughly revised. By Arthur R. Cushny, M.A., M.D., LL.D., F.R.S., Professor of Materia Medica and Pharmacology in the University of Edinburgh. With 73 illustrations. London: J. and A. Churchill. 1924. Pp. 707. 24*s.*

It is surprising to note that it is already six years since the seventh edition of this well-known text-book was published, but after even a conservative review of discoveries made in the time that has passed, it must be granted that there is sufficient warrant for a new edition. As the author points out, the rapidity of progress is not always recognised; thus, since the 1903 edition the space allotted to remedies for specific diseases in the therapeutic index has increased five-fold. The chapter on the action of digitalis has been considerably extended to give a lucid account of the irregularities which may arise under the influence of digitalis therapy. The use of quinidine in auricular fibrillation is described, and the difference between its mode of action and that of digitalis explained. Under the heading of ergot, the author has not considered the properties of histamine and tyramine, but has confined attention to the specific alkaloid ergotoxin (or ergotamine). This treatment should help to clarify the existing confusion, for the presence of histamine and tyramine in ergot preparations has led many to the view that they are essential constituents rather than accidental contaminations of such preparations. Rather curiously, histamine is described in a section together with anaphylaxis, because of the similarity of the symptoms produced by histamine poisoning and anaphylactic shock. Although Cushny makes it clear in the text that the resemblance ends here, one cannot help thinking that some students will be misled by the juxtaposition in the title of the chapter. Local anæsthetics are described in such a way as to draw attention to the substitutes for cocaine; stress is laid on the value of eucaine for application to mucous membranes, and of novocaine and tropacocaine for injection. Finally, chapters on the vitamins and on the insulin treatment of diabetes complete the list of the main new features of the edition.

It is, in some respects, a pity that the author only allows his personality to escape in small print; we think that his remarks on organotherapy, were they known to all students, might have a considerable influence on their future practice. For example, he says: "The theory on which many of these (organ extracts) have been evolved, shows little advance upon the belief of the savage that the courage of the lion may be acquired by eating the animal's heart." The criticism is justifiable. One of the difficulties of modern research consists in keeping abreast of other adventures in different fields; but while this is a difficulty, to maintain adequate contact with the past is almost an impossibility. Many good papers are read and their contents become generally known, but probably for each of these there is another which is forgotten, when the author's work is lost. It is a particular merit of Cushny's text-book that it preserves for us a connexion with a great many papers full of important observations written 30 or 40 years ago, and in this way contributes very materially to continuity in research and the avoidance of repetition. On the other hand, for the clinician the experimental evidence for the value of every therapeutic agent is presented more carefully than anywhere else, and a clinician's success in treatment may depend on his knowledge of that evidence more than on any one other factor.

No attempt is here made to summarise the contents of what is a monumental work—all doctors should possess it.

The Parathyroid Glands in Relation to Disease.

By H. W. C. Vines, M.A., M.D., Fellow of Christ's College, Cambridge, Foulerton Research Student of the Royal Society; late Beit Memorial Research Fellow. London: Edward Arnold and Co. 1924. Pp. 128. 10*s.*

Many of those interested in endocrinology must have felt the desirability of having an impartial and critical review of the position of the parathyroids in relation to disease. Dr. Vines's book supplies to some extent such a need. The physiology and pathology of these organs are fully discussed, especially in their relation to calcium metabolism. There appears to be good evidence that the parathyroids do play a part in the calcium exchanges of the body. To what extent calcium metabolism and the parathyroids come into play in the causation and treatment of such disorders as varicose ulcers, gastric and intestinal ulcers, and various infective conditions, those who read the book must judge for themselves. The impression left on us is that these matters are as yet unripe for decision.

Cystoscopy.

Kystoskopische Technik. By Eugen Joseph, A.-O. Professor at the University of Berlin. Berlin: Julius Springer. 1923. Pp. 221. 15*s.*

This is one of the most satisfactory of the many German text-books on cystoscopy. It is profusely illustrated and the coloured illustrations reach an exactness of reproduction, both by artist and printer, which is seldom attained. Embodied in the book is also a large collection of pyelographs. The compilation of this work can only have come from the careful observation of a large number of patients; the text as well as the illustrations give abundant evidence of this. Whether the author writes about appearances characteristic of tuberculous infection of the bladder, the value to be attached to kidney function tests, the use of diathermy, or other urinary topics, his remarks are always worth consideration, and the book forms a useful guide to the cystoscopist.

Blood Pressure.

Cause, Effect, and Remedy. By L. T. Barker, M.D., and N. B. Cole, M.D. London and New York: D. Appleton and Co. 1924. Pp. 154. 5*s.*

In this little book, written primarily for the layman, the authors give in simple non-technical language an excellent account of the physiology and pathology of blood pressure. After dealing with the factors responsible for the maintenance of normal blood pressure, they proceed to discuss hypertension and its causes, emphasising the fact that no single factor is to be held responsible and showing how over-feeding, over-drinking, and, above all, over-working all play their part in the production of this increasingly prevalent malady. In a chapter entitled "What to do," they indicate clearly how high blood pressure, and incidentally, we might add, many other diseases, may best be avoided. It is fortunate that a book of this type should come from such an authoritative source, and we can strongly advise every practitioner to read it, feeling sure that he will find there not only much useful information but also the best means of imparting it to his patients.

Le Syphiloïde du Jutland.

By Prof. Edv. Ehlers, Médecin en Chef de l'Hôpital Communal de Copenhague. Paris: Masson et Cie. 1923. Pp. 85. Fr.9.

This little brochure was produced on the 150th anniversary of the first legislation for the free treatment of venereal disease in Denmark. It sets down from the beginning in 1773 to the present day the royal rescripts, &c., on this subject. The idea of free treatment for venereal diseases, and at the same time compulsion of the sufferer to have treatment, originated in Denmark with Johan Eichel (1729 to 1817), and to his efforts the first legislation was due. The author shows that in its earlier epidemic form syphilis in Denmark caused frequently destruction and mutilation of the nasal bones. This had the effect of alarming the lay authorities and doubtless helped the passage of legislation. At the present time mutilation of the nose is infrequent in Denmark, because as a result of the measures taken in the last century and a half the disease is now a venereal malady and never assumes epidemic form. Prof. Ehlers believes that the disease attacks the nasal bones preferably in those with primary oral infection, and only supervenes when the disease is not recognised or treated till the nasal lesion begins; this happens early in the primary oral infections common in the epidemic form of the disease. He finds support for this view in the history set down in this little book.

The pamphlet is a most interesting note on syphilis in a peasant community.

PHYSIOLOGY.

Lehrbuch der Physiologie des Menschen. By W. TRENDELENBURG (Tübingen) and A. LOEWY (Davos). With collaboration of other writers. Leipzig: F. C. W. Vogel. 1924. Pp. 789 + xiv. 24*s*.

THIS book represents the fourth edition of what was known as Loewy and Zuntz's Lehrbuch, and should continue to hold the high place among text-books of physiology which that publication deservedly gained. The name of Prof. W. Trendelenburg, which replaces that of the late Prof. N. Zuntz, is highly regarded, and the publishers are fortunate to have secured his services as editor. For those to whom the work is not yet familiar, we can recommend it as one of the most complete and up-to-date text-books on physiology now current. The various chapters are written by recognised authorities on the particular branches of physiological work. The consequence is that the book is kept well up to date in all branches; physiology is now such an extensive subject that this method seems to be the only one to be relied upon. It is unfortunate that since the publication of Schäfer's Text-Book of Physiology no serious attempt has been made to bring out a joint text-book in the English language. Those able to read German, however, can console themselves adequately with Trendelenburg and Loewy's really fine edition.

WHEELER'S HANDBOOK OF MEDICINE.

Seventh edition. By WILLIAM R. JACK, B.Sc., M.D., F.R.F.P.S. Glasg., Physician to the Glasgow Royal Infirmary; Lecturer in Clinical Medicine in the University, Glasgow. Edinburgh: E. and S. Livingstone. 1924. Pp. 692. 12*s*. 6*d*.

DURING the four years that have elapsed since the publication of the last edition many changes have occurred in our outlook upon medicine. The opportunity has been taken of incorporating the more important of these advances in the new edition of this book. This has involved a rearrangement of certain of the subjects, and others have been rewritten or expanded. Certain new articles are added in the section dealing with diseases of the nervous system; they include a description of encephalitis lethargica and progressive lenticular degeneration. "Wheeler and Jack" is a household word amongst medical students. Although the manual has grown since we first knew it, it has not become too unwieldy to carry about for reference during clinical hospital work. The information which it contains is most reliable, and we feel sure that its reputation will continue unabated.

A MANUAL OF THE PRACTICE OF MEDICINE.

Prepared especially for Students. Eleventh edition. By A. A. STEVENS, A.M., M.D., Professor of Applied Therapeutics in the University of Pennsylvania; Visiting Physician to the Philadelphia General Hospital. London and Philadelphia: W. B. Saunders Company. 1924. Pp. 645. 18*s*.

THE eleventh edition of Dr. Stevens's manual for students has been entirely revised, reset, and brought up to date, and additional subject-matter included dealing with such conditions as thrombo-angitis obliterans and toxic goitre. In a book of this size some important subjects are necessarily treated briefly, but the text has been fairly apportioned and a clear and readable account of the essentials of medicine is presented. Over 70 pages are devoted to diseases of the skin, and here, as elsewhere, the text is liberally interspersed with prescriptions, a feature which invariably appeals to students. On the whole, the book compares favourably with other books of similar size and will prove useful for rapid revision for examinations.

A DESCRIPTIVE ATLAS OF RADIOGRAPHS OF BONES AND JOINTS.

By A. P. BERTWISTLE, M.B., Ch.B. Leeds, Resident Surgical Officer, General Infirmary, Leeds. Bristol: John Wright and Sons, Ltd. 1924. Pp. 198. 17*s*. 6*d*.

THIS is a collection of 299 silhouette radiographs of diseases of bones and joints. This method of presenting radiographs was devised by the author and the process is explained in the first part. A very useful feature of the book is the collection of X ray appearances of normal bones and epiphyses. There is great variability in the times of appearance of centres of ossification, which induced the author to add this section to the book. Pathological photographs are arranged in four sections—fractures, diseases of bones, affections of joints, and miscellaneous conditions. Almost without exception, they are representative of the usual appearances seen and very few could be omitted without the usefulness of the book being impaired. None of the photographs have been borrowed from other works, so the book becomes particularly useful as a series of photographs obtained by routine work in a general hospital. The reproductions have been very carefully and beautifully made and they show the structure of the bones almost as clearly as original plates.

CARE AND FEEDING OF INFANTS AND CHILDREN.

Third edition. By WALTER REEVE RAMSEY, M.D. London: J. B. Lippincott Co. 1923. Pp. 290. 10*s*. 6*d*.

IN addition to the various questions relating to growth, feeding, sleep, clothing, and general hygiene, the author discusses a large number of the commoner diseases of children, devoting, indeed, nearly half the volume to a consideration of these abnormal conditions. Dr. Ramsey has admirably succeeded in his aim of giving the trained nurse, for whom the book is designed, the kind of information which will be useful to her. In the chapter on diseases of the respiratory tract a welcome innovation is the protest against the use of pneumonia jackets in pneumonia and bronchopneumonia when the temperature is running high, these appliances simply keeping up the pyrexia by preventing the necessary loss of heat. The use of alcohol compresses in their stead is advised. No reference is made in the chapter on the infectious diseases to the prophylaxis of measles by the subcutaneous injection of serum from a convalescent patient.

The author does not attempt to say anything new upon his subject when novelty is the only argument in favour. The book, which is attractively written and unusually well-illustrated, is likely to remain one of the best manuals of its size for nurses, and to them we heartily commend it.

HEALING.

By the Rev. M. R. NEWBOLT. London: Society for Promoting Christian Knowledge; New York and Toronto: The Macmillan Company. 1924. Pp. 96. 2*s.*

IN this short book we have psychic healing introduced in its implications from the religious point of view. In a chapter on Holy Unction, a form of psychic healing which did not receive the unanimous endorsement of the recent Lambeth Conference, the author points out that, while the Eastern and Western Churches agree that the healing of spiritual infirmities is the first object of this sacrament, bodily healing being a secondary though real part of its content, there has recently arisen in the Anglican Church a use of Unction hardly to be distinguished from faith-healing. Mr. Newbolt holds the view that faith-healing and the sacrament of Unction are two separate things. In regard to psychic healing and medicine, the author, while believing that "in an ideal world the doctor and the spiritual healer would both work together, or, better still, their functions would be combined in the same man," deprecates any conflict between medicine and the church. An appendix deals briefly with Ecclesiastical Miracles, Lourdes, Christian Science, and the methods of Coué.

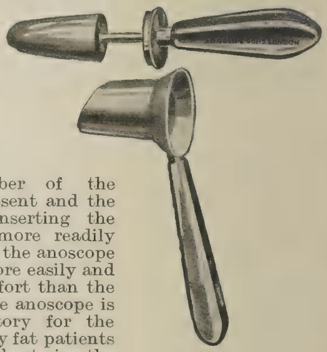
JOURNALS.

BRITISH JOURNAL OF SURGERY.—The April volume contains Sir D'Arcy Power's twelfth eponym on Teale's amputation.—Hamilton Bailey discusses injuries to the kidney and ureter, as seen in 135 cases at the London Hospital in the past 21 years. He shows that whereas the prognosis of uncomplicated injuries to one kidney is extraordinarily good, cases in which other organs are injured as well are usually fatal.—Sir Hamilton Ballance reports a case of spontaneous fracture of the humerus due to an intermedullary capillary angioma. The histological report by the late Prof. Shattock is given.—C. A. Moore, G. Hadfield, and L. E. Claremont review the surgical, pathological, and dental aspects of an epithelial odontome as illustrated by a case under their care.—An account is given of a visit to some of the surgical clinics of Stockholm, and are described: the clinic of Prof. Gösta Forssell at the Radium Institute, that of Prof. Jacobaeus at the Serafimer Hospital, and the work of Prof. Einar Key, and of Prof. Waldenström was also seen.—R. C. Shaw contributes a study of rhizotomy for intractable pain, and he believes that many stump neuralgias may be cured by the division of the dorsal and ventral roots, that in tabes the results completely justify the operation, and finally he draws attention to the brilliant results following the section of the antero-lateral column of the cord.—Twenty-five cases of early acute appendicitis were examined by L. S. Dudgeon and P. H. Mitchener by both bacteriological and pathological methods. The urine and the blood were examined with a view of determining any concomitant infection. Among other results they found fats present in the lumen, mucous lining, in the gland cells, and in the lymph roots of the appendix wall in the quiescent cases, and they suggest that fat absorption occurs from the lumen.—R. St. Leger Brockman's Hunterian lecture on drainage in acute appendicitis summarises the modern opinion on this subject. He points out how easily the peritoneum can defend itself, and yet how incapable of resistance are the muscles of the abdominal wall. He therefore advises closure of the peritoneal cavity with rubber tissue drainage of the muscular layers.—A. Pinoy describes a specific type of blood picture seen in cases of metastatic tumours of bone, and divides them into pseudo-pernicious and pseudo-leukæmic types.—C. A. R. Nitch describes at length that interesting condition known as cystic pneumatosis of the intestine. He believes that they fall into two groups—viz., the commoner cystic and mechanical variety and those due to infection by gas-producing organisms.—R. Lawford Knaggs divides cases of osteogenesis imperfecta into four clinical groups—viz., those occurring in the fœtus, in the infant, in adolescents, and in middle or late life. He points out the hereditary tendency of the condition, and its association with "blue sclerotics." He describes a typical histological picture of the bones, and finally discusses the pathogenesis and treatment.—W. Girling Ball gives an admirable account of the treatment of simple papillomata of the bladder by fulguration, and his paper is most beautifully illustrated by coloured drawings of the cystoscopic appearances.—The following rare or obscure cases are published: (1) J. H. Mather, a pin found in the appendix; (2) H. Nockolds, volvulus of the stomach; (3) C. P. G. Wakeley, a case of carcinoma of the breast, dying 13½ years after operation from diffuse secondary deposits; (4) A. J. Blaxland, intussusception of the sigmoid 3½ years after an intussusception of the appendix; (5) C. P. G. Wakeley, acute intussusception in a bilocular femoral hernial sac; (6) M. B. Hannay and R. F. Young, carcinoma of the solitary kidney.

New Inventions.

AN ANOSCOPE AND SYRINGE FOR THE "INJECTION TREATMENT" OF HÆMORRHOIDS.

THE anoscope is an anal speculum which has been made to my specification for use instead of the proctoscope or rectal speculum in the injection treatment of hæmorrhoids. It is 1½ in. long, but when the obturator is in position it measures 3 in. The advantages of the instrument are: (1) By its use the piles are in the correct position for injection, or at most it need only be withdrawn half an inch; (2) a bigger field is brought into view than is possible when the proctoscope is used, and the exact size and number of the hæmorrhoids present and the best site for inserting the needle can be more readily ascertained; (3) the anoscope can be passed more easily and with less discomfort than the proctoscope. The anoscope is not so satisfactory for the treatment of very fat patients as owing to its short size the buttocks overlap it; a proctoscope with an oblique opening and smooth unraised edge—i.e., the same design as the anoscope—which also has been made for me, will be found more suitable in treating this type of case. The syringe for the carbolic solution is somewhat similar in design to Dawson's dental syringe, but is made of glass with metal jointures, after the fashion of the "Record," so that one can see the solution and make sure that no bubbles or foreign matter are injected with it. It is graduated in minims to hold 40 minims, and special wide-bore needles, ½ in. long, are supplied with it. Very little claim for novelty could be made for this syringe except that it answers the query "What is the best type of syringe for use in the 'injection treatment' of hæmorrhoids?"



The anoscope and syringe are made by, and can be obtained from, Messrs. Arnold and Sons (John Bell and Croyden, Ltd.), 50–52, Wigmore-street, W. 1.

P. KENNEDY MURPHY, M.D. Dub.

Bedford-square, W.C.

THE LANCET.

LONDON: SATURDAY, JUNE 7, 1924.

THE MEMORANDUM ON ENCEPHALITIS LETHARGICA.

THE existing prevalence of encephalitis lethargica, or epidemic encephalitis as this disease is more often called, has increased the interest concerning this comparatively new malady, an interest which is not restricted to the medical profession, but which has spread to the lay press where it is now referred to under the odd description of "sleepy sickness." A brief but at the same time authoritative compendium on a prevailing malady is always welcome, and the Ministry of Health have done good service in issuing a short memorandum[1] at the present time, based on the previous document of 1921, but revised and extended in accordance with recent knowledge and in the light of observations made during the epidemic outbreaks of this year. Primarily intended for local authorities and for medical officers of health, the memorandum is one which may be commended to busy medical practitioners who have neither the opportunity of consulting nor the leisure to read more comprehensive treatises, such as Prof. ARTHUR J. HALL'S Lumleian lectures [2] on epidemic encephalitis, which appear this week in book form.[3] After referring to possible appearances of epidemic encephalitis in the past, the memorandum briefly traces the history of the disease since 1917, the year when it first became recognised as a clinical entity. Its present distribution is worldwide, and most of the countries of Europe, Asia, America, and Australasia have been affected by it in greater or less degree. This extensive occurrence during the last five years argues much for the evolutionary theory of the malady. We are too apt to forget that evolution proceeds ever onwards, and that side by side with the elimination of old diseases, new diseases may appear or reappear after long absence through the originating of a species of organism hostile to man or, alternatively, by reason of the taking on of inimical parasitic function by a previously harmless saprophyte. On the recognition of the disease notification was promptly required by the Central Health Authority in England and Wales. As a result our figures for the incidence of the malady are the most complete of any country. In the five-year period 1919–23 the following cases were notified: 1919, 538 cases; 1920, 914 cases; 1921, 1470 cases; 1922, 454 cases; and 1923, 1025 cases. During the first and second (uncompleted) quarters of the present year the unprecedented number of 2468 cases has been notified (provisional figures). This epidemic outbreak appears to be confined to the British Isles. For the week ending May 24th, 1924, the number of notified cases shows a slight diminution on the provisional figures, 261 cases having been notified, as against 282 in the previous week and 290 in the week ending May 10th. The figures for London have fallen from 43 to 28. It seems possible that the diminution is really greater than appears from the figures, owing to the large amount of public and medical attention which has been given to the epidemic and consequently to the recent identification of slight cases which would not otherwise have been diagnosed. The cases remain scattered, indicating that the wide diffusion of the infection continues.

In spite of much laboratory work the exact identification of the causal organism still eludes the pathologist. The memorandum pays a tribute to the important experimental work of MCINTOSH and of LEVADITI, but emphasises that much further work is required. Investigations on material obtained from the present epidemic are proceeding under the auspices of the Medical Research Council, and are linked up with researches on the whole question of filter-passers and herpetic viruses. It is only by comprehensive attacks of this character that success is likely to be obtained. A short general description is given of the clinical forms of encephalitis lethargica, and reference is made to the clinical alterations in type seen in the epidemic of 1924. "The malady," the memorandum states, "is on the whole less severe, and in many cases the prodromal period appears to exceed the usual seven days. The onset is often ascribed to influenza, and a fortnight or more elapses before the definite signs of encephalitis are manifest. Patients do not remain for lengthy periods in profound stupor or coma, and some have made an unusually rapid recovery; catalepsy is rare." Myoclonic forms are common, and fibrillary twitchings of the abdominal muscles are not infrequent. Signs of hyperactivity of the brain—sleeplessness, delirium, excitement, myotatic irritability—predominate. These changes in clinical characters were drawn attention to by STALLYBRASS[4] as prevailing in Liverpool last year. The French and Italian records show that as early as 1919 such variations had occurred to an appreciable extent on the continent.

The Ministry of Health consider that the case-mortality of encephalitis lethargica since 1917 may be given as between 20 and 50 per cent. These are wide limits and the higher figure is probably the more accurate. On the deaths so far reported in the present epidemic, the case-mortality has varied in different cities from 12 to 21 per cent. of the notified cases. It is too soon yet to make a correct estimation. Stress is laid in the memorandum and in the covering circular on the sad after-effects of epidemic encephalitis, the mental symptoms, the Parkinsonian syndrome, excito-motor and other sequelæ. The diffusion of knowledge on this question is highly desirable, as the sequelæ are of both neurological and medico-legal importance. The original acute attack may be so mild as to pass disregarded, and it is not until alterations in conduct or profound nervous manifestations arise that the true condition is recognised. It is held that the degree of infectivity of encephalitis from person to person is of a low order. Nevertheless, the existence of multiple cases of the disease in the same household, as well as in institutions, must not be lost sight of, and the study of these intensive outbreaks is most likely to be informative as to the channels of spread of the disease. After referring to treatment and abortive mild or "transient" cases, the remainder of the memorandum is devoted to the action which it is desirable for medical officers of health to take on receipt of notification or on learning of suspected cases—a brief chapter in applied hygiene, which we print in full elsewhere.

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[1] Memorandum on Encephalitis Lethargica, 45/med., revised. H.M. Stationery Office. 1924. 1*d*.

[2] THE LANCET, 1923, i., 731.

[3] Bristol: John Wright and Sons. 12*s*.

[4] C. O. Stallybrass: Encephalitis Lethargica, Some Observations on a Recent Outbreak, THE LANCET, 1923, ii., 922.

LEAD AND CANCER.

Prof. Blair Bell's work on the effect of lead in preventing the growth of tissues generally and especially that abnormal method of growth which results in cancer will be familiar to readers of The Lancet of Feb. 9th, 1924. In an address to the North-Western Branch of the Society of Medical Officers of Health, which is published in the June number of *Public Health*, he returns to the subject in a fresh way. After pointing out that he regards malignancy as an atavistic reversion of somatic cells to a condition where they have many of the properties of chorionic epithelium, to which lead is particularly poisonous, he draws attention to the rarity of cancer among those exposed to lead poisoning. The general technical manager of the United Alkali Company is responsible for the very interesting statement that cancer is unknown among the large number of "chemical plumbers" employed by the firm. These men are engaged in making and repairing vitriol chambers, acid cisterns, and the like, fusing the seams with an oxy-hydrogen blowpipe and so being rather freely exposed to volatilised lead; they suffer from plumbism, but not from cancer. The district secretary of the United Operative Plumbers and Domestic Engineers' Association, through whose hands all medical certificates had passed for 25 years, confirmed the absence of cancer in this particular occupational group. The statistics are not, as the author freely recognises, satisfactory or conclusive; they do not, for example, take into consideration age or, which is often of special importance in industrial data, previous and subsequent occupation. The same criticism applies to some further figures relating to the incidence of cancer in towns with lead in the water-supply, and to the increase of cancer which is associated with a decrease in plumbism—the latter being, of course, a form of numerical analysis open to great fallacy. But the facts are put forward in a tentative way to justify the more complete investigation which the author has not been able to carry out. The case of the chemical plumbers certainly seems to be worth further inquiry. The address concludes with an appeal for more activity in the campaign for the prevention of cancer, and here Prof. Blair Bell is less precisely constructive than we could have wished. If the 10,000 deaths per annum from cancer of the breast and uterus are, as he says, almost entirely preventable, the exact lines of preventive action are worth defining. But he rightly points out that the discovery of the cause of disease does not necessarily lead to its control—e.g., tuberculosis—and without at present advocating a universal mild plumbism, he indicates soot, hot drinks, and parturition per vaginam as contributory causes which demand careful thought.

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THE YOUNG OFFENDER.

The establishment of Children's Courts was a wise step, involving the recognition of the importance of separating such as are still at an exceptionally plastic and receptive age from others whose influence or example might have a disastrous effect upon them. It eliminated the risk of publicity, and recognised the desirability of children being dealt with by those who have special sympathy and understanding of the young. But there is a growing feeling that the present system does not go far enough. While the old idea that delinquency must be dealt with by punishing somebody, whether it be by fining the parents or birching the offender, still has great influence; nevertheless, the idea is slowly coming home to many that, instead of being content with primitive and rule-of-thumb methods, it would be wiser to devise some definite means for inquiring into the causes, for dealing with those causes, and eradicating them. It is easier for the medical profession to accept this point of view than it is for the legal. Medical psychologists are concerned with the individual; they regard misconduct as the expression of a state of mind which is abnormal in its social relationships; they seek to ascertain the causes of this state, and if possible to deal with them. But lawyers are not concerned primarily with the individual, but with the protection of the community, and are inclined to think that this can be attained by the deterrent effect of punishment, alike on the individual and the community. Without going fully into this side of the problem, it may be said that the record of the large amount of crime committed in the eighteenth century, when severe penalties were imposed for comparatively minor offences, raised doubt as to the deterrent effect on others, while crime has continued to diminish as punishment and prisons have become more humane in recent years. So, too, while punishment often has a restraining influence on the individual, it is clear that in certain cases an individual's state of mind may be such as to render him undeterred by punishment; indeed, punishment may have the opposite effect. Years ago insanity was recognised as constituting a state of irresponsibility, for which treatment, and not punishment, was required. In 1913 it was enacted that mental defectives also, who committed offences, should be treated and not punished. There are other less well-defined conditions, such as incipient insanity, degrees of dullness not constituting actual mental defect, and cases of mental conflict, in which it is essential that a report on the psychological state should be placed before the court, if justice is to be done. Nor must it be forgotten that in recent years many reports have been published of the complete change in conduct and moral character that has sometimes followed an attack of encephalitis lethargica in a young person. All physicians, too, would agree that abnormal physical conditions sometimes constitute an important factor in juvenile delinquency, both in themselves and also in fostering a feeling of inferiority. Such considerations make it reasonable to ask that every juvenile delinquent should be examined by a medical practitioner, who is also a psychologist, before he is punished or put on probation. In the Children's Court a psychological examination is all-important. It is only possible to judge a child's behaviour, his responsibility for action, and his knowledge of the consequences of any particular action in terms of his "mental age." A child of 12, with a mental age of 6, will probably choose companions of 6 years old, and his behaviour will be more or less that of a 6-year-old child.

Mental defect, in its higher grades at least, can only be diagnosed by the expert with long experience. The magistrate who thinks he can recognise it himself at a glance has only idiots and imbeciles in his mind's eye, and does not know that the courts are still sometimes overlooking not only the feeble-minded but even actual imbeciles. The last report of the Prison Commissioners contains several examples of such procedures, which resulted in mental defectives being sent to prison, and subsequently left on discharge without care and supervision. Other reports show that even when an enlightened minority has provided the necessary machinery, magistrates sometimes do not realise the importance of making use of it. Five years ago Mr. GERALD BEASLEY, then chairman of the Birmingham Justices, introduced a scheme whereby an expert medical psychologist was available to examine any cases referred by the Bench. While this scheme has been used in many adult cases serious enough to be remanded in custody, the annual reports of the Birmingham Justices show that in each of the last two years only four of the less serious cases remanded out of custody have been put back for special examination. Yet this group includes all the cases in the Children's Court, of whom as many as 200 are put on probation in the course of a year. In many of these probation cases there must be physical and psychical abnormalities which ought to be dealt with first. There is the further consideration that the ordinary probation officer is often only able to classify a home as respectable or not, and has not had the training which would enable him to say that some respectable homes have an atmosphere in which it is impossible for the delinquent to develop satisfactorily. Such facts justify the recent action of the People's League of Health in sending a deputation[1] to the Home Office to state their opinion that, even where facilities are provided, the magistrates sometimes do not make proper use of them, thus depriving the child of his rights. Omission to do so is an economic blunder. All investigations into crime show the importance of the habitual offender, while all are agreed that the habitual offender nearly always begins as the young delinquent. The first offender, therefore, so far from being a case to be dismissed with a few words of well-meant advice, requires thorough investigation. Many inquiries have shown that, though it be his first appearance in court, he has often been on the wrong path for years, so that it may be the last opportunity of effective help. Those physicians who have had opportunities of seeing something of the workings of Children's Courts have recognised that unwise treatment of the child offender tends to produce deterioration of character, and to manufacture the habitual criminal. They have been impressed by the consequent moral and economic injury done to the community. They claim that an accurate knowledge of the mentality of delinquent children is essential if the children are to be dealt with justly and satisfactorily. They ask that in each case of actual delinquency the mental and physical history of the delinquent child should be investigated, and as complete a knowledge as possible obtained of his present condition, environment, and associations. Without such an inquiry and examination offenders may be punished when no punishment should be inflicted, and when, on the contrary, medical treatment is imperative.

It is not claimed that every case that comes into court must be examined. Offences against by-laws, such as playing football on the streets, should be treated in another way, requiring rather a social investigation into the facilities for play and recreation in the district. In the opinion of many they should be dealt with in the child's home rather than by bringing him into court. If a considerable group of delinquent children could be examined by medical experts, valuable information would be obtained as to the proportion of mental defectives among young delinquents. Classification of the others would show how far medical treatment was necessary, and give a useful guide as to the arrangements required for dealing with these cases. In Belgium the characteristics, peculiarities, and tendencies of delinquent children are observed by qualified persons and reported upon to the courts before the cases are adjudicated. There is no doubt that a fairly large group of young delinquents commit offences as a result of defective upbringing and faulty surroundings. They are not mentally abnormal, but living, as they do, in an atmosphere of selfishness, vice, immorality, and general depravity, they simply copy the example of those around them. Left where they are they fail to acquire any sense of moral obligation, and grow up with definite anti-social propensities, to become confirmed criminals. But there is clear evidence to show that if children of this type can be put into satisfactory surroundings they may become efficient and useful citizens. There is another group in whom the delinquency, even if of a serious kind, such as burglary, is largely due to a spirit of adventure, daring, and enterprise, which, when directed into healthier channels, may result in the development of valuable qualities. The sympathetic hearing accorded by the Home Secretary to the deputation from the League encourages the hope that the arrangements in the Children's Courts will be still further improved, and soon.

THE KASR-EL-AINY HOSPITAL AT CAIRO.

VISITORS to the Royal Academy may have been struck by the impressive architectural drawings in illustration of the projected rebuilding of the Kasr-el-Ainy Hospital in Cairo. In so far as that building was designed for a particular island site, unfortunately those pictures would seem to mean nothing. While the necessity for a new hospital as clinical and teaching centre has been admitted on all hands, it has for some time, we believe, been known that the site selected had not met with complete Egyptian approval, and in the end might not receive the buildings. This position now seems well confirmed, and the building must be indefinitely postponed if the announcement is accurate that a forfeit has been paid to the architects who had the contract. From a public as well as from a scientific point of view this is a matter of regret, for undoubtedly there is real need in Cairo for a new hospital and new medical school buildings. The delay is attributed to the need for economy, although the dislike of the King of Egypt to the project is well known. But a third reason for inactivity at the moment, and the one that must be operative in all shades of opinion, is the growth of the view that new hospital accommodation for Egypt is mainly needed in the provinces; for it is admitted that while there is only one hospital bed to about 15,000 inhabitants in the rest of the country, there is one bed to 800 in Cairo. This means that in the provinces the sick must often travel by river for as much as three days before reaching the Kasr-el-Ainy Hospital. As a matter of fact, both schemes require accomplishment; Cairo is in as great need as the country in general. In many ways, to bring hospitals to the people is a preferable policy, within limits, than to bring the people to a hospital, but there can be no doubt that a great centre for clinical treatment, scientific research, and medical education is required. Egyptian political affairs are in a transitional state, but scientific development among the Egyptians in respect of medicine will make them lean towards the scheme for a large scientific and clinical centre in Cairo, and an alternative site on the edge of the desert, in the neighbourhood of the capital, has already been spoken of. If this plan were carried out, subsidiary hospitals would be required in the crowded portions of the great city—there are over 800,000 people in Cairo to-day—and at these subsidiary institutions much emergency work and other weeding-out would be done, leaving for treatment at the centre only the suitable cases.

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[1] The medical members of this deputation were as follow: Dr. E. A. Hamilton-Pearson, Dr. E. D. Macnamara, Dr. Christine Murrell, Dr. D. Orr, Dr. W. A. Potts, Dr. R. G. Rows, and Dr. A. F. Tredgold.

Annotations.

"Ne quid nimis."

THE BIRTHDAY HONOURS.

THE proportion of medical to lay honours in the long list which was published on the occasion of the King's birthday is an indication of the ever-increasing part which medicine plays in the affairs of the State, both at home and abroad, and is also a reflection of the growing recognition that the health of the people is an important factor in the spread of empire. In the Order of Merit appears the name of Sir Charles Scott Sherrington, President of the Royal Society, whose physiological reputation is world-wide; and among the baronets that of Sir Humphry Davy Rolleston, President of the Royal College of Physicians of London. A feature of the list is the inclusion of the names of Dr. Janet M. Campbell, Senior Medical Officer for Maternity and Child Welfare to the Ministry of Health, and Chief Woman Medical Adviser to the Board of Education, and Dr. Margaret Ida Balfour, Joint Secretary to the Dufferin Fund, the first of whom becomes a Dame and the second a Commander of the Order of the British Empire. Dr. John Utting, Lord Mayor of Liverpool in 1917–18, Chairman of the Finance Committee of the Liverpool Corporation, and Lieut.-Colonel T. J. Carey-Evans, I.M.S., Surgeon to the Viceroy, become knights. Dr. Malcolm Watson, of the Federated Malay States, also becomes a knight bachelor in recognition of his services in connexion with the prevention of malaria. Colonel Richard Herd, I.M.S., Surgeon-General with the Bengal Government, to be C.I.E. Mr. William Fairbank, Mayor of Windsor, 1919–20, Surgeon-in-Ordinary, H.M. Household, Windsor Castle, is promoted to K.C.V.O. In the Order of St. Michael and St. George Dr. Aylmer William May, P.M.O., Northern Rhodesia, is made Companion. In the Order of the British Empire, in addition to the appointments already mentioned, appear the names of Dr. George Adlington Syme, who becomes a K.B.E., in recognition of his services to the State of Victoria; Dr. W. C. Bowling Prendergast, in recognition of his services in combating lead poisoning. Prof. Edward Provan Cathcart, F.R.S., Professor of Chemical Physiology in the Glasgow University; Dr. Andrew Milroy Fleming, Medical Director, Southern Rhodesia; Col. James Crawford Kennedy, R.A.M.C., and Dr. San C. Po, Municipal Commissioner, Bassein, Burma, who become C.B.E.'s; while Dr. Walter Musgrave Eaton, Assistant Medical Director and Medical Superintendent, Ingutsheni Mental Hospital, Bulawayo, Surgeon-Commander Robert William Basil Hall, R.N., Major Frederick Emilius Roberts, R.A.M.C., and Dr. François Auguste Rouget, Medical Superintendent of the Civil Hospital, Mauritius, receive the O.B.E. Dr. Samuel Benjamin Jones, Medical Officer, Anguilla, Leeward Islands, receives the M.B.E. The Kaisar-i-Hind Medal of the First Class for public service in India has been conferred upon Dr. M. R. Ry Pazhamarneri Sundaram Ayyar Chandra Sekhara, Ayyar Avargal, Director of the Tuberculosis Institute and Hospital, Madras, upon Rai Bahadur Upendra Nath Brahmachari, additional physician to the out-patient department of the Medical College Hospital, Bandal, and upon Rai Bahadur Lala Mathra Das, assistant surgeon in the Punjab. We feel constrained to include in our hearty congratulations to these members of the medical profession the name of Mr. T. P. O'Connor, the new Privy Councillor, who, while being the Father of the House of Commons, is also a veteran journalist.

A DIFFICULT DECISION.

THE Law Lords gave their considered judgment last week on the main issue raised in the Court of Appeal on the Russell case. This judgment is set out on p. 1174. There is one comment upon the course and the result of this case which seems not inappropriate here. Medical men are frequently as parties and witnesses made aware of the uncertainty of litigation, and in the latter capacity not seldom have it thrown in their teeth that in respect of some question of scientific expert opinion other witnesses of equal qualification and capacity differ from them. It has from time to time been pointed out in our own columns that it is not for lawyers to blame medical science and its practitioners for this, because they must be aware of a constant and frequent lack of unanimity in the application of legal science by its recognised experts. In the Russell case a particular point of law, vital to both parties, has been decided by an eminent judge, Mr. Justice Hill, in a particular manner. Mr. Justice Hill was upheld in his decision to admit a certain class of evidence by Lord Sterndale, then Master of the Rolls, Lord Justice Warrington, and Lord Justice Scrutton; he has since been further supported by two Lords of Appeal, Lord Sumner and Lord Carson, and none could assert that Lord Sumner is a less learned or a less painstaking lawyer than Lord Birkenhead. Mr. Justice Hill has, however, been over-ruled by Lord Birkenhead, Lord Finlay, and Lord Dunedin, and their decision prevails. When upon a point of law six eminent authorities hold one thing and three others the exact opposite, the views of the three prevailing, so that the six must be treated as having been wrong, it seems fair to argue that divergences of opinion in technical and scientific matters may exist between experts in the science involved, without the holders of divergent views being open to reproach on account of the absence of agreement between them.

RENAL EFFICIENCY IN NORMAL PREGNANCY.

THE question as to how a kidney which shows some slight defect of function will respond to the increased amount of work which accompanies pregnancy is often a very pressing one for the obstetrician. A definite reply must be secured without delay, since clinical or laboratory methods, which involve prolonged investigation, may involve the onset of serious complications before a decision has been arrived at. Dr. G. Barco, assistant in the obstetric clinic at Turin, presided over by Prof. G. Levi, draws attention[1] to the clinical utility of the dilution and concentration test, by which he claims that in the majority of instances, excluding a few doubtful and complicated cases, it is possible to settle the functional inefficiency of the kidney by its incapacity to eliminate water and to estimate the amount of all the waste products and thus establish a kind of balance of the solid material which passes the renal filter. The dilution test brought forward in 1900 by Kowesi and Roth-Schultz consists in the drinking, when the bladder has been emptied, of 1000–1500 c.cm. of water on an empty stomach, and in the estimation during the subsequent four to five hours of the quantity and specific gravity of the urine passed every half hour. Under normal conditions the following characteristics are observed: (*a*) The maximum amount of urine eliminated in half an hour is 500 c.cm. This is of the highest importance, as it is the measure of the maximum velocity of glomerular secretion and by itself alone indicates a good glomerular reaction. (*b*) The elimination of water drunk ends in four hours. (*c*) The quantity of water eliminated through the kidneys in the four hours following its ingestion is never lower than 91 per cent. of the water taken in. (*d*) The specific gravity falls to 1004–1001 in the first two hours pari passu with the marked increase in the urinary amount; after five to six hours it returns to its former figure. (*e*) There is never any increase in body-weight, showing that water is not retained in the organism. Under abnormal conditions it is found that (*a*) the amount of water eliminated every half hour is materially reduced; (*b*) the elimination of water altogether in the four hours after ingestion is decidedly below that taken in, showing that elimination is more or less retarded; (*c*) corresponding with diminished volume there is little decrease in specific gravity. On the basis of these characteristics three types of abnormal behaviour to the test may be distinguished. (1) Retarded type, in which even though all the water introduced is eliminated in four hours, there is delay in the elimination of the greater portion; the initial rapid rise of diuresis is wanting. This condition indicates disturbed renal function. (2) Dangerous type, showing grave functional lesion, in which each portion eliminated is small and equal, even sometimes absent. In the four hours only a few hundred cubic centimetres are eliminated, while the specific gravity is scarcely lowered. (3) Extra renal type, which is met with in cases where, although the renal function is intact, the water tends to pass into the tissues and serous cavities. Although the initial diuresis is rapid and the amount of the first portion eliminated is conspicuous, yet almost all elimination ceases after two hours. But the elimination in four hours is incomplete, because a good deal of water has already penetrated into the tissues and cannot be eliminated by the kidneys. The concentration test is simple. Half an hour after the completion of the dilution test, and again six hours later, a full meal is given without liquid. The urine is collected every two hours, and its specific gravity taken. A healthy kidney under these conditions shows a rapid increase in urinary specific gravity. Should this be small or lowered, renal insufficiency is indicated. By carrying out these two tests in rapid succession it is said to be possible to obtain sufficiently precise information of the total functional renal efficiency. From the diagnosis the next step to prognosis is easy, and it is made possible for the obstetrician to judge how the state of maternity will be supported by the organism. Dr. Larco pleads for a more extended and routine use of these tests. To neglect them would be equivalent to neglecting percussion of the lungs and heart on the ground that the results are capable of varying interpretations and be subjected to influences which may diminish their value. The relative simplicity of the test is certainly a strong reason in favour of its being tried on an extensive scale, and the problem is so grave that trial of such methods is to be strongly advocated.

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[1] Rivista Medica Subalpina, Turin, January, 1924.

THOMAS HODGKIN, PATHOLOGIST AND PHILANTHROPIST.

To the current issue of *Guy's Hospital Reports* Sir William Hale-White contributes an informing paper on Thomas Hodgkin, whose name is indissolubly connected with a disease of lymphatic glands. Hodgkin was a notable man in many ways. His father, John Hodgkin (1766–1845), was a grammarian and a tutor to the children of wealthy families. Thomas, born in 1798, was educated at home, becoming fluent in Latin, Greek, French, Italian, and German. He learned his medicine at Guy's Hospital and abroad, graduated M.D. at Edinburgh in 1823, after having, in 1822, attended clinical instruction given by Laënnec at the Necker Hospital, to which circumstance is due the introduction of the stethoscope to Guy's Hospital on his return from Paris. Hodgkin visited Germany and also Rome, where he lodged with a Dr. Viale, who was surgeon to the Inquisition. In 1827 Benjamin Harrison, treasurer of the hospital, determined to make really good the Medical School of Guy's Hospital, now separated from that of St. Thomas. He saw the importance of morbid anatomy and appointed Hodgkin as lecturer, a post which he held until 1837, when the death of Dr. Henry Cholmeley created a vacancy upon the medical staff. For this post Hodgkin and Babbington were candidates and the latter was appointed. Hodgkin then left Guy's Hospital and started in private practice. In 1842 he was appointed lecturer on the theory and practice of medicine to St. Thomas's Hospital School, but his lectures, says Sir William Hale-White, were very diffuse, "and it is difficult to imagine that they fixed the attention of his audience." Besides medicine Hodgkin was always deeply interested in philanthropic works; he was one of the founders of the Aborigines Protection Society, and for many years he used to travel with Sir Moses Montefiore in the East to aid Jews and relieve their miseries. It was on one of these journeys that he contracted dysentery of which he died in 1866 at Jaffa, where his grave is marked by an obelisk of syenitic granite. The work by which Hodgkin is chiefly remembered rests upon a paper read by him in 1832 before the Medical and Chirurgical Society, entitled "On Some Morbid Appearances of the Absorbent Glands and Spleen," which attracted little attention at the time. This is not to be wondered at, for only four of the cases mentioned in the paper were examples of what we now know as Hodgkin's disease, and the writer seems to have laid but little stress upon this case. It was not until Bright, and after him Wilks, in 1856 recognised the importance of Hodgkin's paper that the discovery was properly attributed to him. Wilks, indeed, discovered the disease independently, but directly he found, after reading Bright, that Hodgkin had forestalled him, he hastened to acknowledge his precedence. Among other works of Hodgkin was a volume "Lectures on the Means of Promoting and Preserving Health," delivered at a mechanics' institute about 1830, and setting forth the harm which flows from filth, overcrowding, bad sanitation, horrible houses, drunkenness, bad food, want of vaccination, lack of fresh air, and exercise. Sir William Hale-White has succeeded in making Thomas Hodgkin live again in the minds of the present generation.

OSMICS.[1]

THIS is the second number of a useful little production. The first number of *Osmics*, containing an introduction and 500 bibliographical references, was issued in 1922 and was found useful by many engaged in researches into the difficult subject of olfaction in its many bearings. Between the two issues has appeared the entertaining book by Dr. Dan McKenzie,[2] which has interested many people in what was regarded as an abstruse topic. The issue of a second number of *Osmics* has been prompted by the hope that a further bibliography of the literature on the organs and sense of smell, and on odorous substances, will facilitate and encourage research into the various problems involved. The entries are made without comment of any sort upon the value of particular books or papers, but full references are given, leaving the reader to ascertain whether he has found what he wants. Nothing more has been attempted in the first two issues, but the author suggests that further numbers will appear and possibly summaries of original research into the various aspects of osmics, provided there is an adequate demand for such a "clearing-house." We hope the demand will be obtained, for the value of the publication will be enormously increased by the inclusion of some critical information. Smell has been the least cultivated of the senses, so that there is reason to hope that, if the subject receives something of the attention which has been given to the senses of hearing and sight, the study of odours should reach a higher scientific plane. But one practical point constitutes a difficulty at the beginning. The classification of smells suffers from the absence of the mathematical analysis which can be employed in optics and acoustics. There is consequently no accurate nomenclature of smells, though many attempts have been made to establish some system here comparable to the classification which has been set up in regard to seeing and hearing. Arising out of a report on the treatment of war wounds made by that distinguished veteran, Prof. W. W. Keen, in 1917 at the request of the National Research Council of America, a correspondent in The Lancet pointed out how extremely convenient it would be if it was possible to name the smell of a wound in such a precise way that exactly what was intended could be recognised by investigators at a distance. But the conclusion was arrived at that this would imply the bringing together of smells into a system of scales or octaves which had so far only been attempted with moderate success and in a limited manner, the allusion being to the work of Septimus Piesse in classifying perfumes. Reference is given in *Osmics* to this work, which was published originally some 20 years ago. In it there is set out a series of odours in parallel with the musical scale, the attempt being to show how it should be possible to make a bouquet corresponding to a chord. The gamut of odours thus constructed did suggest a law of octaves according to the investigator's ingenious arrangement, but, as has been pointed out, however, in these columns before, while some persons associate certain colours with smells and others speak of certain musical notes as suggesting corresponding colours, the occurrences are not proved to have any scientific interest.

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[1] Osmics: The Science of Smell. By John H. Kenneth, M.A. Edinburgh: Oliver and Boyd. 1924. 2*s*. net.

[2] Aromatics and the Soul, reviewed in THE LANCET, 1923, ii., 1086.

HOUSING CONDITIONS IN GERMANY.

Prior to the war, housing facilities in Germany were vastly better in the larger towns than in the villages and country generally, especially from a sanitary point of view. Here the rooms of dwellings were small and frequently overcrowded. Nevertheless, on the whole, a quantitative lack of accommodation did not exist, and a qualitative lack only in old-time buildings; any untoward influences were counterbalanced by the presence of open spaces. Since the war, however, owing to the general depression and lack of material building has almost ceased; the housing shortage has been accentuated by the advent of over a million refugees from ceded territories, whilst the birth-rate has, if anything, increased. A comprehensive review of the housing conditions in their relation to social and industrial health has recently been published by Prof. E. Friedberger,[1] director of the Institute of Hygiene at the University of Greifswald. Greifswald is in Pomerania, and the writer considers it a typical example of a small German town. Here the post-war shortage is one of smaller dwellings; only 21·5 per cent. of middle- and lower-class families seeking accommodation were successful in 1920. Students were, and still are to a very great extent, poorly provided for, though a few are given sleeping facilities by well-to-do families. In a large number of labouring-class dwellings and municipal houses chosen at random, it was established that the average room-space was only 7·2 cubic metres (approx. 267 cub. feet) per person, and the window: floor area varied from 1 : 14 to 1 : 69. The rooms were damp, and those used as kitchens were unhygienic and small, serving as bedrooms as well. Ten per cent. had no window at all; in the majority of cases there was no kitchen range. There was one water-tap between five families, representing about 40 persons; bathing facilities were unavailable and sanitary arrangements thoroughly bad. Lighting was provided for by means of petroleum in less than 12 per cent. of cases, in 7 per cent. by calcium carbide, 19 per cent. by tallow candles, 9 per cent. by some oil substitute, in the remainder there was no provision. On an average there were 2·6 persons per bed, for which in 35 per cent. there was no linen. The incidence of disease has decidedly increased, though the relative percentage of tuberculosis is lower than usual, as death occurred rather from enfeeblement due to want of nourishment. Amongst children rickets is but slightly increased, as they are constantly in the sun and fresh air; but their physique is exceedingly poor. The measures adopted by the authorities to combat the housing shortage were planned in 1920, and consisted in building a small number of houses adapted to one and more families. Each dwelling comprises two rooms and a kitchen, which, perhaps not ideal, are at any rate light and dry, and can be heated. Additionally, a small garden is attached, where some live-stock can be kept and a modest amount of vegetables grown. Electric light and water are laid on. The sewage is retained in tanks below the ground, and is used as garden manure. Investigation on the birth-rate showed an average of 6·3 pregnancies per family; 90·5 per cent. of the expectant mothers were unable to avail themselves of the local clinics, owing to their being compelled to work right up to the day of their confinement; 70 per cent. of the total pregnancies ended in live births, the remainder of the infants died shortly before or after delivery; 70·5 per cent. of the infants were nursed by their mothers for varying periods; the same percentage was obliged to be fed at 15 months of age on food partaken of by adults. The hygiene was similarly unsuitable. Such are the conditions under which the present generation in Germany is growing up, and their effects will be only patent in the next few decades.

EPITHELIOMA OF THE TONSIL.

At the last annual meeting of the Medical Society of the State of New York Dr. Leon H. Smith[1] read a paper on epithelioma of the tonsil based on the study of 40 patients who had been treated at the Buffalo State Institute for the Study of Malignant Disease. The cases were divided into the four following groups: (1) cases with the new growth confined to the tonsil and excellent general condition (4 cases); (2) cases with early cervical metastases and good general condition (10 cases); (3) cases with well-marked metastases and poor general condition (14 cases), (4) hopeless cases with advanced toxic cachexia (12 cases). Thirty-six of the patients were males and 4 females. The ages ranged from 28 to 82, the average age being 55. As regards the earlier medical history, only 12 stated that they had had previous attacks of sore-throat or tonsillitis; 75 per cent. admitted excessive indulgence in tobacco, and only three had not used nicotine in any form. Ten had well-marked dental caries, and seven moderate dental caries accompanied by pyorrhœa. In three there were upper and lower plates. In only two patients was the Wassermann reaction positive. The chief complaints were sore-throat and discomfort which were present in at least 50 per cent. A biopsy was performed on each patient, care being taken to remove only a small portion of tissue if dental caries or oral sepsis was present. In the differential diagnosis the following conditions had to be excluded: gummata, tuberculoma, papilloma, sarcoma, and Vincent's angina. The possibility, however, of the coexistence of syphilis or tuberculosis with cancer should not be overlooked. The earlier patients were treated by X rays, but the results in the vast majority were unsatisfactory, retrogression of the neoplasm and improvement of the general condition being only temporary. During the last three years a combined method of treatment has been adopted. Radium emanations in glass beads are inserted into the growth where they are allowed to slough out or remain encysted, and deep X rays or the new radium pack are applied to the cervical regions. Apart from cases of a fulminating type, patients in whom the symptoms had lasted one to three months only were favourable subjects for treatment. After the lapse of three months the cases became more refractory to treatment and after six months altogether inoperable. Seventeen patients in the present series died from hæmorrhage, two from general sepsis, four from suffocation due to œdema of the glottis, and three from profound toxæmia. In conclusion, Dr. Smith emphasises the importance of early diagnosis and the prompt institution of radiation therapy.

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[1] Untersuchungen über Wohnungsverhältnisse. Jena: Gustav Fischer. Pp. 112. 3 gold marks.

[1] New York State Journal of Medicine, March 7th, 1924.

DOMINIONS MEDICAL HOSPITALITY.

THE Dominions Hospitality Committee, Sir William Hale-White, President, has arranged its programme for the entertainment of overseas visitors. The appended list has been circulated to all visitors who have registered their names, and these are requested to reply as soon as possible, indicating the functions which they would like to attend.

Programme.

June 13th: Address by Sir Almroth Wright and visit to his laboratories at St. Mary's Hospital, Paddington, at about 4 P.M.

June 20th: 8.15 P.M., Kensington Town Hall, Cavendish Lecture by Sir Robert Jones, followed by conversazione by the West London Medico-Chirurgical Society.

June 23rd: 2.15 P.M., visit to Greenford (Messrs. Lyons and Co., Ltd., works). Charabancs to leave 1, Wimpole-street, 2.15 P.M. Tea provided.

June 26th: Visit to the laboratories of Messrs. Parke Davis, at Hounslow. Luncheon and tea at Hounslow. Dr. J. Stanley White will give a demonstration of matters of pharmacological interest. Charabancs will leave 1, Wimpole-street about 12 noon. Return via Windsor.

June 30th: Reception and ball in the Guildhall by the Corporation of London.

July 8th: Dinner at the Apothecaries' Hall, by the Society of Apothecaries.

July 9th: Luncheon at the Town Hall, Portsmouth, by invitation of the mayor, followed by a tour arranged by the naval authorities (leaving London in the morning, and returning in the evening).

July 17th: Luncheon by THE LANCET.

Visit to Lord Mayor Treloar Cripples' Home, Alton. (*Date to be arranged.*)

Visitors who have not received the above notice should inform the Hon. Secretaries, Mr. A. E. Mortimer Woolf, 94, Harley-street, W. 1, or Mr. E. T. C. Milligan, 86, Harley-street, W. 1, as soon as possible.

FLUELESS GAS STOVES.

THE report of the joint committee, formed by the Society of Medical Officers of Health and the Royal Sanitary Institute to consider the use of gas stoves for domestic and workshop heating where no provision is made for the escape of flue gases to the outer air, has now been issued. The Society of Medical Officers of Health was represented by Prof. H. R. Kenwood, Dr. D. C. Kirkhope, Dr. F. N. Kay Menzies, and Dr. E. H. Snell, and the Royal Sanitary Institute by Prof. A. Bostock Hill, Dr. J. S. Owens, Dr. L. C. Parkes (chairman), Mr. J. Osborne Smith, and Mr. H. D. Searles Wood. Much valuable information on the use of flueless gas stoves was received from medical officers of health of large cities, including the cities of London, Glasgow, Liverpool, Nottingham, Leeds, and from the metropolitan borough of Stepney. Dr. J. S. Owens submitted for the consideration of the committee a report on flueless gas fires from a hygienic aspect, to which special attention is drawn. He discusses the products of combustion and the questions of humidity, ventilation, and losses in flue, and comes to the following conclusions as to the use of flueless fires: (*a*) There is a problematical saving of up to 30 per cent. in heating efficiency by abolishing the flue; (*b*) the quantity of CO_2 and water in the air of a room are greatly increased; (*c*) sulphur in the gas contaminates the air in the form of SO_2 or SO_3; (*d*) the ventilating effect is practically nil; (*e*) if there is a leakage or the gas tap is not fully closed, the gas escapes into the room; (*f*) if combustion is imperfect owing to wrong design, the stove going out of order, or being incorrectly used, poisonous products—such as CO—escape into the room; (*g*) there is a great temptation for users to restrict ventilation purposely so as to economise heat. From the evidence submitted to them the committee are of opinion that whilst there is little or no evidence of any injurious effects upon health by the use of these flueless gas stoves under ordinary conditions—i.e., where the rooms are of fair size, sufficiently ventilated, and not overcrowded—there is always an element of risk of the escape of CO gas into the room, as pointed out in (*e*) and (*f*) of Dr. Owens's summary. So convinced are the committee of the necessity of a very free ventilation existing where flueless gas stoves are in use that—bearing in mind the usual absence of this free and effective ventilation in living rooms, bedrooms, workrooms, &c.—they think it desirable to discourage the introduction of these stoves and to express the opinion that their use can only be justified in such places as entrance halls, passages, and landings, where ventilation is free and where occupants do not remain for any considerable length of time.

INDUSTRIAL FATIGUE RESEARCH.

EACH succeeding annual report, and this is the fourth, of the Industrial Fatigue Research Board tells of progressive advance in the organisation and methods employed in this difficult field of research. New facts brought to light continue to support those obtained by earlier work, so that gradually the principles underlying human activity are being ascertained. Industrial depression during the past two years has militated against the gathering of much useful information under normal conditions; but the opportunity has been seized upon for following up problems by intensive laboratory research. An instance is the value of interpolating short rest pauses during long spells of work, already studied on light repetitive work; here laboratory and industrial observations confirm one another and indicate a beneficial effect upon output from rest pauses scientifically used. Investigations are in progress into such general subjects as accident causation, the design of machinery, the physiology of ventilation, sickness, and mortality, while research has been conducted into the principles governing muscular action, weight carrying, and tests for physical efficiency, and is being pursued into vocational selection, the legibility of type, and other matters. Clearly the scope of the work is wide, and the need for it great. In addition to a general review, the report contains contributions from individual investigators; the first of these, by Miss M. Smith, is a clever survey of psychological problems confronting an investigator in industry; we seem to know the explosive manager whose inflated egotism is easily wounded, the over-anxious man with much irritability and little self-reliance, and that other one whose obsession is tidiness; and, on the other side, the truculent worker resentful of criticism, the ultra-weak worker with lost individuality, and the one who welcomes monotony as providing free scope for mental fancies. Each and all these personalities react differently and interfere with the validity of data collected for measuring output. Mr. E. Farmer, in a discussion of the method of grouping by differential tests, presents a disquisition on logic in which the principles associated with the name of Jevons are displayed under a new nomenclature in an industrial environment; nevertheless, the presentation of the subject is good and useful. An excellent case is made out by Mr. S. Wyatt for establishing schools of training for industrial operatives, particularly for cotton-weavers; he shows that existing methods of training are haphazard, inefficient, and uneconomical, and rightly points out that everyone "possesses abilities which are more suitable for one industrial process than another, and it becomes necessary to consider the possibilities of finding for each individual the industrial task most suited to his requirements." The last contribution is by Dr. H. M. Vernon, and deals with the use and significance of the kata-thermometer; although it is rather technical in places, it is a clear and readable exposition of the subject.

Dr. John Parkinson will give the address in medicine before the Canadian Medical Association at their fifty-fifth annual meeting to be held at Ottawa from June 17th to 20th. The subject of his address will be the Diagnosis of a Healthy Heart.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXIV.—TREATMENT OF GLAUCOMA.

THE most useful classification of glaucoma from a practical point of view is (1) secondary glaucoma, (2) primary chronic glaucoma, (3) primary acute glaucoma.

By secondary glaucoma is meant glaucoma which occurs as a complication or as a result of some other disease of the eye; thus an intra-ocular neoplasm, repeated attacks of iritis or cyclitis, or thrombosis of the central retinal vein may be the responsible cause. The subjects of such conditions will mostly have been under special care for the primary disease and the possibility of the complication will have been anticipated; I do not, therefore, propose to deal with this group.

Primary glaucoma is more common in females and is of unusual occurrence before middle age; myopes are in large measure immune from it and hypermetropes are predisposed to it. The essential feature of the disease is an increase of the intra-ocular tension, even though in chronic cases the increase may be present for short periods only during the day, and thus easily overlooked. If we consider the course of the aqueous flow within the eye, we see that it is secreted into the posterior chamber of the eye by the columnar cells which clothe the ciliary processes; some of it infiltrates the vitreous body, but the greater part passes forward over the front of the lens, through the pupillary aperture into the anterior chamber, and leaves the globe by filtering into the crypts of the iris, and by gaining access to the canal of Schlemm and the spaces of Fontana through the angle of the anterior chamber.

There are three chief points at which this circulation may be obstructed: (*a*) The ciliary processes may become so swollen that they come into contact all round with the margin of the lens, the vitreous chamber being completely shut off from the aqueous chambers; the vitreous will swell, the lens, and with it the iris, will be pushed forward, making the anterior chamber more shallow, tending thereby to close the angle of the chamber and so to obstruct the exit of the aqueous from the eye; this is believed to be the course of events which leads up to the occurrence of an attack of acute glaucoma. (*b*) The second point of possible obstruction is at the pupillary aperture. After repeated attacks of iritis the iris may become so completely stuck to the lens upon which it rests that the flow of aqueous through the pupil is prevented; in this case the posterior chamber becomes distended, the iris becomes bulged forwards (iris bombé), and so the angle of the anterior chamber becomes occluded; this would be an example of secondary glaucoma. (*c*) A third point, the angle of the anterior chamber, is the site of obstruction in primary chronic glaucoma; the anatomical configuration of a small hypermetropic eye, with a relatively large lens and a shallow anterior chamber, and the increased size of the lens as age proceeds, are predisposing causes, factors causing an anterior chamber, which from the first was shallow, to become still more shallow.

Primary Chronic Glaucoma.

The reduction in depth of the anterior chamber which results from the growth of the lens is an exceedingly gradual process, and the period of transition between the point at which the exit of the aqueous is efficient and the point at which it becomes no longer quite adequate is thus a very gradual transformation; the onset of the disease is correspondingly insidious, and symptoms in the early stages are fleeting and unobtrusive.

Diagnosis.—In a number of cases the cornea is obviously so small and the anterior chamber so shallow that it is clearly necessary to exclude glaucoma, even though no symptoms may be present. There may be a history of attacks during which objects are seen as through a mist, or as if the room was filled with smoke, or, owing to corneal œdema, lights may appear to be surrounded by wide rainbow-coloured haloes; such symptoms as these are very suspicious. There may be complaint of rapidly increasing difficulty with reading. The optic disc, being a weak part of the tunics of the globe from its being perforated by the bundles of the optic nerve fibres, becomes herniated backwards, producing the so-called glaucomatous cupping, and there is developed a constriction of the visual fields which is most marked at the upper nasal side.

Treatment.—It is sometimes assumed that a high general systolic blood pressure is likely to cause a heightened intra-ocular tension, and that therefore reduction of the blood pressure should have a part in the treatment of such cases. In this connexion I have shown that there is good reason for believing that a pressure in the brachial artery of, say, 220 mm. does not imply that the pressure in vessels of the size of those within the eye is at all raised; secondly, I have shown that taking primary glaucoma patients as a class, they do not have blood pressures above the normal for individuals of their age, and on the other hand, that as a class, patients with very high blood pressures show no increase of intra-ocular tension; and thirdly, a view which has many adherents is that in a majority of individuals it is not possible greatly to lower the systolic blood pressure except by methods which are so drastic as to disturb very seriously the general constitutional well-being. In spite of what has been said above, I need hardly insist that anything which advances the bodily or mental welfare of the patient is greatly to be advocated in the treatment of the disease we are considering.

Local Treatment.—All local treatment is directed against the intra-ocular tension. There will always be a certain number of cases where operative treatment for various reasons is not available, as, for example, ill-health or infirmity, unwillingness on the part of the patient to submit to operation, and so non-operative treatment has to be resorted to. In non-operative treatment the one drug that is of value is eserine; by causing contraction of the pupil it drags the iris away from the angle of the anterior chamber, and so does what is possible to relieve this channel of exit of any obstruction which a dilated pupil, with its accompanying thickened iris, might produce. The drug is usually used in the form of ¼ per cent. solution of the sulphate to be dropped into the eye night and morning, or, if attacks of mistiness occur at regular times of the day, it is well to anticipate such attacks by using the drops a little beforehand. Excessive reading should be avoided, and a protection against bright light by means of tinted glasses is advisable. The best prospect of arresting the disease is by means of operation. All modern operations have for their object the relief and prevention of the high intra-ocular tension, and to this end the formation of a permanent fistulous communication between the anterior chamber and the subconjunctival space is aimed at so that the aqueous filters slowly away amongst the subconjunctival tissues in addition to its normal route of exit. The operation most in vogue is that of sclero-corneal trephining. I have recently introduced a small modification which gives improved results—namely, the careful sewing up of the conjunctival incision with a fine and accurately applied continuous silk stitch, so as to make the incision watertight from the first.

Acute Glaucoma.

In sharp contrast with the slow, insidious, painless progress of chronic glaucoma, this form of the disease is very acute. Prodromal attacks of mistiness of vision, headaches, rainbow rings, and increasing presbyopia are common, and previous transitory subacute attacks may have occurred. The attack is characterised by pain radiating along the branches of the fifth nerve, or referred to the whole side of the head; there may be vomiting; the sight is rapidly reduced; the pupil is partly dilated, loses its circular shape, and fails to react to light stimulus; the cornea is œdematous, so that the fundus cannot be seen with the ophthalmoscope; and, above all, the tension of the eye is so increased that unless tenderness prevents a reasonable examination, no one, however inexperienced, will have difficulty in satisfying himself with regard to this crucial sign. Though the diagnosis of acute glaucoma need present little difficulty, the condition is still frequently overlooked, being labelled biliousness or gastritis with deplorable results. In such cases the eye itself, the cause of all the mischief, escapes treatment for several weeks, by which time the sight is most often completely and permanently destroyed. Acute glaucoma is a rather rare disease, but though a medical man may never have come across a case, he should always bear it in mind as a possibility. The chief local condition with which acute glaucoma may be confused is acute iritis; here again a mistaken diagnosis will lead to serious detriment to the eye, for the vigorous use of atropine, which is imperative in the treatment of iritis, is the worst possible treatment for glaucoma; differentiation between the two conditions, however, is seldom difficult, and we may conveniently tabulate the most helpful points in parallel columns:—

Acute Iritis.	*Acute Glaucoma.*
May occur at any age, but especially from 16 or 18 onwards.	Rare under the age of 45.
Pupil small and circular.	Pupil semi-dilated and irregular.
Sight somewhat dim.	Sight greatly deteriorated.
Tension normal or at most a little raised.	Tension greatly raised.
Corneal surface a little dulled.	Corneal surface very œdematous.
ATROPINE IMPERATIVE.	ATROPINE INADMISSIBLE.

Treatment.—The condition is so painful and the loss of sight so great, that patients seldom demur to operative treatment at the earliest possible moment; there is a great deal, however, that can be done to relieve the condition where arrangements for operation cannot immediately be carried out, and some surgeons advocate the employment of these preliminary measures as an adjunct in all cases; they consist of the instillation of eserine every quarter of an hour for six times; the application of two or three leeches to the temple of the same side; fomentations to the eye; and a smart purge; eserine should always be instilled into the other eye for fear of an attack of glaucoma in it. By these means the tension of the eye can usually be sensibly reduced, and the subsequent operation performed with a reduced risk.

Operation.—A general anæsthetic, preferably chloroform, is desirable, but if there is a serious contraindication to its use the operation may be carried out under local anæsthesia by injecting 2 per cent. novocaine solution under the conjunctiva and deeply into the orbit. There is a wide consensus of opinion amongst ophthalmic surgeons that a rather wide iridectomy is the best form of treatment; the results are usually good and permanent.

R. FOSTER MOORE, B.Ch. Camb.,
F.R.C.S. Eng.,
Assistant Ophthalmic Surgeon, St. Bartholomew's Hospital; Surgeon, Moorfields Eye Hospital.

LONDON DERMATOLOGICAL SOCIETY.—The annual oration will be delivered at 4.30 P.M. on June 11th, at St. John's Hospital, Leicester-square, London, W., by Prof. M. Oppenheim, of Vienna, on Affections of the Skin Caused by Occupation and Profession. The oration will be illustrated by lantern slides in colour. Prof. Oppenheim will be the guest of the society at dinner at 6.30 P.M., at the Criterion Restaurant, in a private room (entrance in Regent-street). The price of each ticket is 7*s.* 6*d.* Fellows who desire to attend or to bring guests are asked to notify the secretary, Dr. A. Knyvett Gordon, at 10, Bedford-square, London, W.C. 1, before the meeting.

THE GENERAL MEDICAL COUNCIL.

DURING the remainder of the May session of the General Medical Council, which was continued throughout last week, the business consisted of the election of members to certain committees, the reception and discussion on various reports, and the consideration of penal cases.

Report of Committees.

The report of the *Examination Committee* was presented in two parts: Part I. giving an analysis of the annual tables for 1923, and Part II. relating to other matters, among which is a statement showing that the percentage of rejections in midwifery in the qualifying examinations is always lower than in either of the other two subjects, medicine and surgery, except in the case of Cambridge University. It is pointed out that this may be due to the fact that there is no clinical examination in midwifery in many centres, and also to the fact that it is a subject covering a smaller field and therefore more easily absorbed by the student.

While the Council's inspectors had reported favourably on the standards set and maintained in medicine and surgery, the inspector of midwifery had commented unfavourably on the omission of any practical test in the examinations on this subject in many of the final examinations; but the most recent returns show that while 17 bodies now hold such an examination, six do not—namely, the Universities of Cambridge, London, Liverpool, and Aberdeen, the English Conjoint Board, and the Apothecaries' Society of London; the University of Aberdeen, however, is about to introduce such an examination. In the University of London the percentage of rejections has fallen since candidates were not required to pass in all three subjects simultaneously. The percentage of rejections is highest by those bodies who are examining bodies only, since candidates are unknown to the examiners, and class records cannot be taken into consideration. The system of visitation to various examining bodies by members of the Committee has produced valuable results and will be continued for the present.

In the discussion which followed Mr. Waring said that in the case of a body such as the Conjoint Board, it would be impossible to accept class certificates, as they would come from so many sources as to render it impossible to reduce their value to a common denominator. Sir Francis Champneys said that ten minutes was far too short a time in which to examine a candidate in midwifery; the half-hour given at Cambridge was, however, quite satisfactory. He also thought that vaginal examinations were most important, but that many bodies objected to their taking place during qualifying tests. The report was agreed to.

The *Pharmacopœia Committee*, after considering certain correspondence on the matter, decided to suggest to the Council that it was desirable for this country to be represented at the proposed conference in Brussels in 1925. As regards the proposed International Bureau, however, more mature consideration would be needed before any decisions were arrived at. The committee suggested to the Council that the Lord President should be informed that assistance would be given in choosing delegates to the Brussels Conference, on the understanding that they should only report to the Government, and not be given any powers to bind either the Government or the Council. The report was agreed to.

The *Finance Report* shows an income of £2785, £196 more than in 1922. A heavy loss is still incurred in the publication of the Register, but the committee do not see how it could be made more informative in the manner of a directory and so increase its sale, which to the public at present is only about 200 copies a year. They feel that this pecuniary loss must be borne in carrying out this important statutory function.

Canada.—A new arrangement has been arrived at with the provinces of Alberta, Manitoba, New Brunswick, Nova Scotia, Ontario, and Prince Edward Island in relation to the registration of medical qualifications obtained in Canada being registered in this country. The arrangements with Quebec have not yet been concluded.

Penal Cases.

The following penal cases were deliberated on by the Council :—

The Case of Charles Russell Corfield.—This practitioner, registered as of 205, High-street, C. on M., Manchester, L.M.S.S.A. Lond., 1919, had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, you committed adultery with Gladys Nellie Frankish, a married woman, with whom you stood in professional relationship, of which adultery you were found guilty by the decree of the Probate, Divorce and Admiralty Division (Divorce) of the High Court of Justice, dated March 12th, 1923, and made absolute on Sept. 19th, 1923, in the case of Frankish *v.* Frankish and Corfield, in which you were the co-respondent ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The Council found that the facts alleged had not been proved to their satisfaction, and the case was accordingly dismissed.

The Case of Bryan Buckley Sharp.—This practitioner, registered as of 20, Rupert-street, London, W. 1, M.R.C.S. Eng., 1918, L.R.C.P. Lond., 1918, M.B., B.S., 1921, U. Lond., had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, you on Jan. 30th, 1924, on the application of Miss Ada Sher for a Foreign Office passport (supported by her declaration in the usual form as to address, age, national status, and purpose for which required), made a declaration stating 'that to the best of my personal knowledge and belief of the above-made declaration of the said Miss Ada Sher is true, and that I can *from my personal knowledge* of her vouch her as a fit and proper person to receive a passport,' whereas you had no previous knowledge of the said Ada Sher, which declaration was untrue, misleading, and improper ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The Council found that laxity had been proved, but did not direct erasure from the Register.

The Case of Trevor Owen Williams. (Adjourned from Nov. 28th, 1922, and further adjourned from Nov. 30th, 1923.)—This practitioner, registered as of 4, Ullet-road, Liverpool, M.B., Ch.B., 1913, U. L'pool, M.R.C.S. Eng., 1913, L.R.C.P. Lond., 1913, had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, and a captain in the Royal Army Medical Corps, you were on Oct. 14th, 1917, tried by a General Court Martial overseas on a charge of drunkenness whilst on active service in the field on Oct. 7th, 1917, of which charge you were found guilty and sentenced to be dismissed from His Majesty's Service, the finding and sentence being duly confirmed ; and that, being a registered medical practitioner, and while giving evidence before Mr. Justice Greer at the Assizes at Liverpool on Feb. 2nd, 1922, you were drunk, being reprimanded by the judge for being in that condition ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect ; and that you were at the city of Liverpool police-court convicted of the following misdemeanour, viz. : On June 23rd, 1922, of being drunk and disorderly and fined 10*s.* and 10*s.* doctor's fee."

At the conclusion of the hearing on Nov. 30th, 1923, the President announced the Council's decision as follows : "The Council, in consideration of the communications from the Salvation Army, have adjourned the further hearing of the case of Trevor Owen Williams until the May session of the Council in 1924."

At the resumed hearing of the case this session, the Registrar having read the notice of inquiry, the Council's solicitor placed the present facts of the case before the Council. He read correspondence which had taken place with the Salvation Army authorities, showing that Mr. Williams had not kept his promise to refrain from drink.

The Council, having deliberated on the matter, the President delivered the following judgment : "Mr. Williams : I have to inform you that you have been proved to have been convicted of the misdemeanours alleged against you in the notice of inquiry, and that the Registrar has been directed to erase your name from the Medical Register."

The Case of John Christie Forbes. (Adjourned from Nov. 28th, 1923.)—This practitioner, registered as of 40, Mayfield-road, Edinburgh, L.R.C.P. Edin., 1895, L.R.C.S. Edin., 1895, L.F.P.S. Glasg., 1895, had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner : (1) You on numerous occasions permitted your clerk, Mrs. Wyman, to sign in your name and issue certificates required for National Health Insurance purposes, and that in many of such cases you had not examined the patient although so stated in the certificates, which were untrue, misleading, or improper. The insured persons and the certificates in question were as follows—viz. : (*a*) Robert Martin, 20 certificates ; (*b*) William Stewart, 19 ; (*c*) Archibald Harris, 14 ; (*d*) N. Strachan, 18. (2) You permitted the said Mrs. Wyman on three occasions to sign in your name and issue orders for three separate prescriptions for an insured person, Archibald Sharp, without having first seen or examined him ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The Council did not see fit to erase Dr. Forbes's name from the Register.

The Case of Nowroji Merwanji Tarachand.—This practitioner, registered as of Mansfield, Nottingham, M.R.C.S. Eng., 1893, L.R.C.P. Lond., 1893, had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, you : (1) On August 4th, 1923, signed in anticipation of your holiday a number of intermediate certificates of incapacity for work for eight insured persons on your list, which certificates stated that you had examined these person on certain dates—namely, August 6th, 7th, and 8th, 1923—whereas on such dates you were away on your holiday ; (2) on your return from such holiday signed a first certificate and notice of sickness for an insured person on your list which you antedated, and which stated that you had examined the patient on August 8th (such certificates being required for National Health Insurance purposes) ; which certificates were untrue, misleading, or improper ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

In this case judgment was postponed till May, 1925.

The Case of Shridhar Bheekajee Gadgil.—This practitioner, registered as of Mhow, India, L.M.S.U. Bombay, 1898, M. 1900, F. 1915, R.C.S. Eng., L.R.C.P. Lond., 1900, had been summoned to appear before the Council on the following charge :—

"That you were on Sept. 21st, 1923, at the Marlborough-street police-court, convicted of the following misdemeanour—namely, of insulting behaviour, and were fined 40*s.* and 2 guineas costs, or 11 days' imprisonment ; and that on your appeal on Oct. 12th, 1923, to the County of London Quarter Sessions from the decision of the said court the said decision was confirmed, and you were ordered to pay the taxed costs of the respondent of the said appeal."

Judgment was postponed till the May session, 1925.

The Case of Henry Love.—This practitioner, registered as of Avoca, Mitcham, Surrey, M.B., U. Dub., 1878, L.R.C.S. Irel., 1878, had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, you by your countenance or assistance knowingly enabled Mrs. Elizabeth Woolsey and Mrs. Munt, women not certified under the Midwives Acts, 1902 and 1918, to attend women in childbirth, and Mrs. Marie Stiler a woman not entitled to practise midwifery in the administrative county of Surrey, also to attend women in childbirth, under cover or pretence that such women were attended or to be attended by you or by the said Mrs. Woolsey, Mrs. Munt, or Mrs. Stiler, under your direction, and that in some of these cases you signed maternity benefit certificates and gave notifications of birth, thereby enabling each of them, the said Mrs. Woolsey, Mrs. Munt, and Mrs. Stiler, in contravention of the said Acts, to practise as a midwife ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Judgment was postponed till May, 1925.

The Case of James Robert Stott, O.B.E. (Consideration adjourned from May 31st, 1923.)—This practitioner, registered as of 202, Ewell-road, Surbiton, Surrey, M.B., Ch.B., 1910, B.Sc. (P.H.), 1912, M.D., 1918, U. Edin., had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, you by your countenance or assistance knowingly enabled one Annie Hennings, a woman not certified under the Midwives Act, 1902, to attend women in childbirth under cover or pretence that such women were attended or to be attended by you or by her under your direction, and that in some of such cases you signed maternity benefit certificates, thereby enabling the said Annie Hennings in contravention of the said Act to practise as if she were certified thereunder ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

After a short deliberation, the President delivered judgment in this case as follows : "Mr. Stott : I have to inform you that the Council have considered the evidence as to your conduct during the interval which you have tendered, and they have resolved : That they do not see fit to direct the Registrar to erase your name from the Medical Register."

The Case of Henry Bowen Perkins.—This practitioner, registered as of 105, Dock-road, Tilbury, Essex, M.R.C.S. Eng., 1890, L.R.C.P. Lond., 1890, had been summoned to appear before the Council on the following charge :—

"That you were on Nov. 13th, 1914, at the Grays Petty Sessions convicted of being drunk, and were fined 1*s.* and 4*s.* costs ; that you have abused your position as a medical man by behaving improperly at your surgery to the following persons—viz. : (1) On or about Nov. 21, 1922, to Mrs. ——, who had called for a certificate for her husband, who was a patient of yours ; (2) on or about Jan. 28th, 1924, to Mrs. ——, who was a patient of yours ; and (3) on or about Feb. 19th, 1924, to Miss ——, who was a patient of yours ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

After deliberation, the President announced the judgment of the Council as follows : "Mr. Perkins : I have to inform you that the conviction alleged against you in November, 1914, of a misdemeanour has been proved to the satisfaction of the Council. The facts alleged against you in regard to the abuse of your position as a professional man, however, have not been proved, and the case is dismissed."

The Case of Jonathan Allan Thornhill.—This practitioner, registered as of Ingleside, Newnham, Glos., L., L.M., 1891, R.C.P. Irel., L., L.M., 1891, R.C.S.Irel., had been summoned to appear before the Council on the following charge :—

"That being a registered medical practitioner : (1) On April 15th and 18th, 1923, while attending a Mr. J. P., who was seriously ill from influenza, you were so far under the influence of drink that your power of judgment and sense of responsibility were affected to a degree rendering you unfit to be in charge of a serious case of illness. (2) On April 23rd, 1923, you gave to the said J. P., a National Health Insurance certificate stating that you had examined him on that date and that he was incapable of work by reason of broncho-pneumonia, whereas you had not seen or examined the said J. P. on that date or since April 18th, 1923 ; which certificate was untrue, misleading, or improper ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The Council found that the first part of the charge had not been proved to their satisfaction, and as regards the second part they suspended judgment till November of this year.

The Case of Henry Spencer Hughes.—This practitioner, registered as of Galen House, Lozells-road, Birmingham, M.R.C.S. Eng., 1894, L.R.C.P. Lond., 1894, had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, you by your countenance or assistance knowingly enabled one A. D., a woman not certified under the Midwives Acts, 1902 and 1918, to attend women in childbirth under cover or pretence that such women were attended or to be attended by you or by her under your direction, and that in some of such cases you signed maternity benefit certificates and gave notifications of birth, thereby enabling the said A. D., in contravention of the said Acts, to practise as if she were certified thereunder ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The facts having been proved to the satisfaction of the Council, judgment was postponed till the May session, 1925.

The Case of Harold Walmsley.—This dental practitioner was registered on Dec. 29th, 1919, as of Northwood, Prestwich Park South, Manchester, L.D.S. V.U. Manc., 1919. The Dental Board, having considered the complaint against the said Harold Walmsley, reported as follows :—

"The said Harold Walmsley did not attend and was not represented. Service of the notice of inquiry was proved by the solicitor. The following facts were established by the evidence : Harold Walmsley was convicted at the assizes held at Northampton on Jan. 21st, 1924, of indecently assaulting a male person and of committing an act of gross indecency with a male person and sentenced to nine months' imprisonment in the second division. The evidence before the board consisted of a certified copy of the said conviction, a report of the trial from the *Northampton Mercury* of Jan. 25th, 1924, and three testimonials dated in April and May, 1924. The board have, therefore, resolved to transmit to the General Medical Council their finding—namely, that the name of Harold Walmsley ought to be erased from the Register."

Mr. Walmsley did not appear, nor was he represented. The President announced the decision of the Council as follows : "I have to announce that Harold Walmsley, having been found by the Dental Board to have been convicted of the misdemeanour alleged against him in the notice of inquiry, the Council has directed the Registrar of the Dental Board to erase from the Dentists Register the name of Harold Walmsley."

The Case of Abraham Frank (or Franks).—He was registered on Sept. 4th, 1922, as of 201, High-street, Shoreditch, London, E. 1, Dentist, 1921. The Dental Board, having considered the complaint against the said Abraham Frank, reported as follows :—

"The said Abraham Frank did not attend and was not represented. Service of the notice of inquiry was proved by the solicitor. The following facts were established by the evidence : On the prosecution of the Dental Board, the said Abraham Frank was convicted on March 25th, 1924, at the Old-street police-court, London, of aiding and abetting his son, Percy Frank (or Franks) to practise dentistry, he not being registered in the Dentists Register, and was fined 20 guineas and 5 guineas costs. On the same day the said Percy Frank was also convicted of practising dentistry, not being registered so to do, and was fined 20 guineas and 5 guineas costs. Abraham Frank is, or was, a hairdresser, and it did not appear that he had ever practised dentistry or was capable of doing so. His son, the said Percy Frank, who was under the age required by the provisions of the Dentists Act, 1921, for registration, practised dentistry at 201, High-street, Shoreditch, in the name of his father. Abraham Frank was on the premises at 201, High-street, Shoreditch, in attendance in the rooms where his son was practising, and had covered him in such practice. Abraham Frank had applied for registration under Section 3 (1) (*a*) of the Dentists Act, 1921, and had lodged the statutory declaration required by the regulations of the Dental Board. It appeared from the evidence given at the police-court that the statutory declaration had, in fact, been signed by the said Percy Frank in the name of his father, and that the father could sign his own name but not well, nor could he read writing very well. The evidence before the Board consisted of the accompanying documents : (1) A certified copy of the said conviction ; (2) the depositions taken at the Old-street police-court on March 25th, 1924, and the documents exhibited thereto. The Board, therefore, resolved to transmit to the General Medical Council their finding—namely, that the name of Abraham Frank ought to be erased from the Register."

Mr. Frank did not appear in answer to his notice nor was he represented. The Dental Board were represented by their solicitor, who stated that he had nothing to add to the report and finding. The President announced the decision of the Council as follows : "I have to announce that the Dental Board having found the facts alleged against Abraham Frank in the notice of inquiry to have been proved, the Council have directed the Registrar of the Dental Board to erase the name of Abraham Frank from the Dentists Register."

The President announced that the Registrar of the Dental Board had been directed to restore to the Dentists Register the name of Walter Ernest Tate.

Medicine and the Law.

Russell v. Russell in the House of Lords.

Judgment was delivered on May 30th in the House of Lords in the Russell divorce suit which for many months has excited the attention of the public and which, owing to the nature of the principal issue involved and of the evidence relating to it, may fairly be said to possess special interest for medical men. The decision arrived at does not, or may not, absolutely conclude the question of divorce raised by the petition, but only disposes of the main issue raised in the Court of Appeal, and since then in the House of Lords, as to whether evidence given by Mr. Russell in the divorce court regarding the marital relations between himself and his wife was properly admitted. In Lord Birkenhead's words this question was whether by the law of England evidence of non-access may in proceedings for divorce be tendered by a spouse and received by a court with the object, or possible result, of bastardising a child of the marriage. The House of Lords, by a majority consisting of Lord Birkenhead, Lord Finlay, and Lord Dunedin, has answered this question in the negative, Lord Sumner and Lord Carson dissenting. Consequently, if the petitioner proceeds further in the particular case under decision, his own evidence must be excluded, and he must rely on such other evidence as he may be able to tender.

Lord Birkenhead, in his judgment,[1] after stating the issue involved, referred at length to the pronouncement of the law enunciated by Lord Mansfield in the case of Goodright *v.* Moss in 1777: "The law of England is clear that the declarations of a father or mother cannot be admitted to bastardise the issue born after marriage." This, his lordship held, covered the case of evidence introduced for the purpose of obtaining divorce, and had not been modified or altered by the Act of 1869, Section 3 of which enables husbands and wives to give evidence in proceedings instituted in consequence of adultery. Lord Birkenhead laid stress on the anomaly which would arise if evidence should be admitted in divorce proceedings, which would tend to prove a child born in wedlock to be illegitimate, whereas it could not be admitted, when at some other date and in other proceedings, the declaration of the child's illegitimacy might be sought. According to his lordship, Lord Mansfield's declaration that the rule was founded upon "decency, morality, and public policy," did not have the meaning ascribed to it by the Court of Appeal, and that court had gone "strangely wrong" upon this point. What Lord Mansfield meant was that a deeply-seated domestic and social policy rendered it unbecoming that evidence should be received from such a source and with such a possible result; it had nothing to do with the reception in divorce courts of evidence of an "indecent" character. In his lordship's view a long series of later judgments had affirmed and re-stated the rule in Goodright's case. The Act of 1869 did not make husbands and wives competent witnesses upon all points relevant to the issue between them, but only enabled them to give evidence not otherwise inadmissible. The witnesses had become competent but they might not give this evidence.

Lord Finlay and Lord Dunedin delivered concurring judgments.

Lord Sumner, in a very learned and exhaustive judgment,[1] dissented from the view of Lord Birkenhead, holding that, although the rule laid down by Lord Mansfield applies still in cases the object of which is to establish the illegitimacy or legitimacy of a child born during wedlock, it should not be applied in cases in which the object aimed at is the dissolution of marriage, and in which the husband and wife are the only witnesses having actual knowledge of the facts as to which they can give evidence. Lord Sumner agreed that Lord Mansfield did not exclusively refer to what is in itself unseemly or disgusting, but he protested against the injustice done to the memory of the late Lord Sterndale, in thinking that he had in the Court of Appeal gone "strangely wrong" in his application of Lord Mansfield's word "decency." Lord Sumner was "afraid that the sanctity of marriage intercourse passed into the limbo of lost causes and impossible loyalties in 1857."[2] "The divorce court sits," Lord Sumner continued, "that the secrets of married life may be divulged." There could be nothing but prejudice to decorum if it were made plain that material facts were being kept from the court. It appeared to him a logical and a legal solution to recognise that a divorce petition and a legitimacy issue are distinct, and to apply Lord Mansfield's rule to legitimacy issues only. It had been said that absurd and incongruous results might follow. It might be found in one case that a bastard child had been born and a marriage might so be dissolved, and yet the same child might have to be declared to be no bastard in legitimacy proceedings; but this need not cause dismay. The same results would have followed if in the trial of the divorce case non-access had been proved by evidence other than that of the husband. Other incongruities could be discovered in other instances of two trials occurring in the courts and relating to the same facts. Lord Mansfield's rule had never been applied in divorce cases, and in Lord Sumner's view it was undesirable to extend its scope. He therefore dissented from the views of Lord Birkenhead, Lord Finlay, and Lord Dunedin, and held that the evidence was rightly admitted and that the appeal should be dismissed. Lord Carson followed with a judgment to the same effect.

Nystagmus and Suicide.

A case of some importance was decided at Leigh, Lancashire, by Judge Mellor on May 30th. The widow of a miner, aged 46 years, claimed compensation from the colliery proprietors for the loss of her husband, who had worked at one of their collieries for 30 years. Deceased had been certified as suffering from nystagmus last year, and before that time was described as "a bright, cheerful man." He tried work on the surface, but had to give it up. Later he committed suicide. For the applicant, Dr. C. H. Melland, consulting physician to the Royal Infirmary, Manchester, testified that miner's nystagmus led to depression and a morbid fear of going blind, often accompanied by dismal forebodings, nightmare, and fearful dreams. A man in that state was always liable to take his life. The judge said he had had a somewhat similar case two years ago at Leigh, when he awarded compensation and his decision, which was the first of its kind, was later upheld in the Court of Appeal. He considered that deceased deliberately committed suicide and that the suicide was directly due to nystagmus. He awarded the widow £297 with costs.

Coroners and Fires.

Dr. F. J. Waldo, coroner for the City of London and Borough of Southwark, in his annual report for 1923, records that in that year he held 173 inquiries into fires under the City of London Fire Inquests Act, as against 189 in 1922 and 236 in 1921, the average number of such fires in the last 22 years being 152. Dr. Waldo is a strong believer in the usefulness of the powers which he thus exercises, and recommends the holding of inquests after fires, whether there has been loss of life or not, throughout the country, instead of as now exclusively in the City. The subject has been considered, he points out, by the Royal Commission on Fire Brigades and Fire Prevention, which published its report in 1923, and recommended that inquiries into the cause of fires should be held in all appropriate cases. The Commission advised that the holding of such investigations in suspicious cases would act as a deterrent against arson, as well as being likely to elicit valuable information on technical questions. A majority of the Commission, however, also recommended that the investigation of fires should be held not by coroners, but by persons with technical qualifications, apparently with the idea that these should be experts in construction, in building materials, and in other technical matters likely to be included for consideration in the scope of such inquiries. Dr. Waldo, very reasonably, supports the view of the chairman of the Royal Commission, in holding that the coroner, as an independent judicial officer, in many instances qualified as a lawyer, and having the experience and machinery of his office at his command, should be fully competent and better equipped than anyone else for the task. His undertaking it would also prevent the duplication of the inquiry which otherwise would take place, whenever death through a fire might render an inquest of the usual kind necessary. He suggests that the matter should be considered when the law relating to coroners is revised. Its revision, it need hardly be pointed out, has been urged, promised, and postponed so long that those interested have almost abandoned the expectation of it taking place. The Act now in force was passed in 1887.

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[1] The judgments of Lord Birkenhead and Lord Sumner will be found fully reported in the Times of May 31st.

[2] In 1857 the Divorce Court was instituted, and the Ecclesiastical jurisdiction in matrimonial causes superseded.

Special Articles.

ENCEPHALITIS LETHARGICA:

SUGGESTED ACTION BY MEDICAL OFFICERS OF HEALTH.

ENCEPHALITIS lethargica was made compulsorily notifiable throughout England and Wales from Jan. 1st, 1919. In present knowledge the action which medical officers of health are able to take on receipt of notifications or on learning of suspected cases is necessarily limited, and is set forth in the concluding section of the Memorandum on Encephalitis Lethargica just issued by the Ministry of Health, which is the subject of a leading article in the present issue of THE LANCET. The Memorandum regards it as very important that action should proceed on the following lines :—

(*a*) Full determination of the associated conditions and any facts which may throw light on the epidemiology of the disease.

(*b*) Search for mild and abortive cases.

(*c*) Aiding in any practicable pathological investigation and in obtaining material for the purpose.

(*d*) Aiding in securing the treatment of the case in hospital or otherwise.

(*e*) Enjoining the precautions required in the case of a disease apparently capable of transmission from person to person, especially through mild or abortive cases capable of carrying infection ; and

(*f*) "Following up" and recording the after-history of patients ; in particular, as to any mental after-effects which may be observed. In this connexion inquiry should also be made into the previous history of children who began to exhibit changes in behaviour or unusual accentuation of undesirable qualities ; these symptoms not infrequently point to an overlooked attack of epidemic encephalitis at an earlier date.

Specimens of cerebro-spinal fluid from cases or suspected cases of encephalitis lethargica can be sent, if desired, to the Ministry, for examination. The fluid should be withdrawn under strictly aseptic conditions, placed in a thoroughly sterilised bottle, free from disinfectants, and forwarded in accordance with the regulations of the Post Office to the Medical Officer (Med. 1), Ministry of Health, with particulars or reference to reports already sent. Medical officers of health are invited to take any action which they consider useful and practicable to secure post-mortem and pathological examinations by skilled workers who are investigating the disease.

Hospital and Nursing Facilities.—In view of the severity of the disease and the importance of good nursing, it is important to secure hospital treatment as far as possible. The isolation hospitals of local authorities should be available for this purpose. Any public nursing arrangements possessed by or arranged with the authority should be made available for cases treated at home.

Precautions against Infection.—The other occupants of a house in which a case of encephalitis has occurred, or is being treated, may be assured that the disease is one of low infectivity, and that very slight risk is run by association with the patient. At the same time it is desirable that such association should be limited to what is necessary for proper care and nursing, and the patient should be well isolated in a separate room.

School-children in the affected household may be kept from school, as a precautionary measure, for three weeks after the isolation of the patient. There is no necessity to place restriction on the movements of other occupants provided they are frequently examined and remain well. Those in contact with the case, however, may be advised to use antiseptic nasal sprays or douches and to gargle the throat with solutions such as those advised for influenza. For example, any of the following :—

(1) One per cent. solution of peroxide of hydrogen.

(2) A solution of permanganate of potash, 1 in 5000, in 0·8 per cent. solution of chloride of sodium (common salt).

(3) Liquor sodæ chlorinatæ, 0·5 per cent.

These solutions can be used as ordinary throat gargles or snuffed up the nostrils, or applied by an efficient spray. Any persons in the infected household who suffer from sore-throat or other symptoms suggesting an abortive attack should be treated from this point of view and isolated as far as possible until they have recovered. The sick-room s thoroughly cleansed and disinfected at the end of the illness.

REPORT OF THE HEALTH OF THE ROYAL AIR FORCE, 1922.*

TAKING the Force as a whole, and excluding cases of less than 48 hours' duration, sickness incidence shows an increase of 16·7 per 1000 of strength on the figures for 1921. This increase can be almost entirely attributed to the increase in the number of cases of sandfly fever which occurred overseas. This disease accounted for over one-quarter of the total cases of sickness reported from abroad, and gave a case-rate per 1000 of strength of 230·6, as compared with 122·9 in 1921. The 48-hour cases have but little effect on the total non-effective rate caused by sickness, but it is interesting to note that whereas in the United Kingdom the number of such cases practically equals those of longer duration, abroad these minor cases outnumber those of greater severity in the approximate ratio of 10 to 7. In the following remarks cases of 48 hours' duration are not taken into account.

Sickness and Death-rates.

The average duration of each case was reduced by over two days from 19·6 in 1921 to 17·4 in 1922 ; a corresponding proportionate decrease in the number of days' sickness per head did not, however, result, owing to the increased case-incidence rate to which reference has already been made. There was, however, a reduction of nearly one day's sickness per head. The average number sick daily was reduced by 2·1 per 1000 to 24·6. The numbers finally invalided from the service decreased from 34·3 to 15·1 per 1000 of strength. This latter figure may presumably be taken as representing a more normal figure than those in previous years, during which the effects of the war were still being reflected in the invaliding figures. It is satisfactory to note that a smaller proportion of the strength overseas was invalided home during 1922. The death-rate per 1000 for the total force fell from 4·7 to 4·3. In the United Kingdom the case-rate shows a slight decrease of approximately 2 per 1000, the Mediterranean Littoral an increase of 54 per 1000, Iraq of 190 per 1000, and India a decrease of 532·9 per 1000. As a result of this marked reduction, the sickness-rate in India was the lowest for overseas areas, whereas in 1921 it was the highest. The decrease in sickness in India is attributed to improved sanitary and hygienic conditions and to the increased experience of tropical conditions of both officers and airmen. The chief diseases peculiar to tropical climates—namely, sandfly fever, dysentery, and malaria—are dealt with in detail in the chapter relating to overseas areas. In addition, the work of the R.A.F. Sandfly Fever Commission at Malta is described in a separate chapter. This chapter describes in detail the bionomics and life-history of the *Phlebotomus papatasii*, and gives the findings of the Commission. A summary of the experiments carried out at Malta is given, and also of the various recommendations as regards fly destruction, prevention of biting, and scale of fans for living quarters. The incidence of sandfly fever was to some extent counter-balanced by a decrease in the malaria case-rate, which dropped from 122·9 in 1921 to 73·6 in 1922.

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* To be purchased directly from H.M. Stationery Office at the following addresses : Imperial House, Kingsway, London, W.C. 2 ; 28, Abingdon-street, London, S.W. 1 ; York-street, Manchester ; 1, St. Andrew's-crescent, Cardiff ; or 120, George-street, Edinburgh ; or through any bookseller. 1924. 3s.

Venereal Disease.—An investigation into the value of "914" in the treatment of chronic and relapsing cases of malaria was carried out in India. The results obtained were encouraging, although no definite conclusions were reached. The primary venereal disease-rate—already low—shows a further reduction of 3·2 per 1000, dropping from 22·4 to 19·2. These figures show a satisfactory state of affairs. A further attempt has been made to estimate the value of prophylaxis, and a table is given which summarises the data collected during 1921 and 1922.

Accidents and Injuries.

Causes of injury are again dealt with in detail under 11 main headings. Flying accidents accounted for 52 cases of injury and a further 50 deaths. These numbers are higher than in previous years, but it must be borne in mind that the amount of flying carried out has greatly increased. Taking this into account, it appears that the increase in the case-rate was considerably less than the proportionate increase in the amount of flying carried out during the year. It may also be observed that the increase of 14 in the number of deaths and the consequent increase in the death-rate is to a large extent accounted for by the fact that there were eight deaths as the result of three collisions in the air. During 1921 only one death was due to an accident of this nature. Accidents occurring whilst swinging propellers fell from 28 in 1921 to 21 in 1922. Accidents caused by a back-fire whilst starting motor engines were 48 in number, compared with 71 in 1921 and 102 in 1920. The number of cases of injury resulting from such accidents has been more than halved in three years, and this satisfactory feature is attributed to a more widespread knowledge of the correct method of starting engines. In addition, there were a further 122 cases of injury caused by motor accidents; of this number 81 were due to motor cycles. Accidents occurring during athletics again account for approximately one-third of the total number of cases of injury; sprained ankle (115) and traumatic synovitis of the knee-joint (100) are responsible for one-third of the total due to athletics. The nosological tables are presented in a condensed form, and a useful addition is the insertion of corresponding ratios for 1921 in respect of the main groups of diseases. (Statistics for the entire force are not available for comparison prior to 1921.)

Standards of Acceptance and Rejection.

The constitution of the Central Medical Board has remained unchanged, although its functions were enlarged during the year. All candidates for commissions in the service now undergo a physical examination by this Board. Interesting tables are given showing the average physical measurements of candidates accepted for flying duties. The chief causes for rejection are also given. The principal points of interest appear to be: (1) The uniformity of the results obtained in the total number of examinations conducted during 1921 and 1922. (2.) The lengthening of the time of return to normal from the exercise pulse-rate. This may in part be due to the slight rise in the rate of the pulse after exercise, noticeable in 1922. (3.) The chief cause for rejection again being the defects of vision, either alone or in association with defective physical efficiency.

As in previous years all officers were medically examined towards the end of the calendar year, and tables are given showing the average responses of all tests capable of numerical expression. Interesting features in these tables are: (1) A rise of 1 per cent. in the number of officers found fit for full flying duties, the figure being 78 as compared with 77 per cent. in 1921. This rise is more marked in the general duties branch, the essential function of which is flying. The increase in this branch is 3 per cent. (2) The close approximation of the percentages fit for full flying at home and abroad.

Apart from this increased percentage of officers found fit for full flying duties, the average response to the various tests shows, on the whole, an improvement on the results obtained in previous years. This result is the more satisfactory when it is borne in mind that the results in previous years were themselves well above the accepted standards. It is also noteworthy that the results obtained by many and diverse medical officers at home and abroad during 1921 and 1922 should show: (1) Such close approximation in the two years, pointing to uniformity of technique. (2) Such slight variation from the existing standards which were evolved from successful pilots during the war.

Recruiting is dealt with in a separate section, and various tables show the average physical measurements of accepted recruits classified by age, previous occupation, and geographical areas of residence. A further table shows the chief causes for rejection at R.A.F. recruiting depôts during the year.

Hygiene and sanitation are dealt with in detail under the various geographical areas at home and abroad. It is satisfactory to note that further improvements in conditions were effected during the year under review. Vaccination and inoculation are treated in a separate section, and the results of all vaccinations carried out during the year are given in detail in tabular form.

The report under review has been prepared on similar lines to previous reports. Condensation of all tables has been still further effected, and the tables have been simplified wherever possible. It is satisfactory to note that the price has been further reduced from 5*s.* to 3*s.*

SCOTTISH REPORT ON PUERPERAL MORBIDITY AND MORTALITY.

THE report of the Scottish Departmental Committee on Puerperal Morbidity and Mortality was published last week.[1] The Committee, it may be remembered, consisted of Lord Salvesen (chairman), Mrs. Mary Barbour, Dr. R. C. Buist, Miss M. E. Cairns, Dr. T. F. Dewar, Miss A. M. Fraser, Dr. Matthew Hay, and Dr. B. P. Watson, the complete term of reference being "to inquire into the incidence of puerperal morbidity and mortality in Scotland, with special reference to the causes contributing thereto, and to suggest any remedial measures."

The Committee in 12 meetings took the evidence of 40 well-selected witnesses, while the statistical information was supplied from various authoritative sources.

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[1] Edinburgh: H.M. Stationery Office. 1924. 1*s.*

Puerperal Mortality.

The Registrar-General for Scotland furnished the Committee with the statistics of puerperal mortality in Scotland arranged in groups of causes and also according to district, age-group and otherwise, and in the appendix the following table is given showing the deaths from puerperal causes in Scotland during the period from 1855–1922 in decennial means.

Deaths from Puerperal Causes in Scotland.

Years.	Total deaths from puerperal fever.	Metria or puerperal fever.	Other diseases and accidents of childbirth.	Death-rate per 1000 births.		
				Total.	Puerperal fever.	Other diseases of childbirth.
1855–1864	512	180	332	4·9	1·7	3·2
1865–1874	595	213	382	5·1	1·8	3·3
1875–1884	660	252	408	5·2	2·0	3·2
1885–1894	658	306	353	5·3	2·5	2·8
1895–1904	605	246	359	4·6	1·9	2·7
1905–1914	703	216	488	5·6	1·7	3·9
1915–1922	704	194	510	6·2	1·7	4·5

The possible sources of fallacy in this table are pointed out inasmuch as the certificates of the cause of death do not necessarily show the fact of pregnancy, while the statistician in classifying the deaths where the certificate shows more than one cause may include these cases either as puerperal deaths or deaths with other origin.

Comparison of Deaths in Different Areas.

The mean death-rates in the various local areas of Scotland, years 1911–22, show considerable variations, but while landward areas show a higher rate than burgh areas, statistical expectation has been generally accurate, and whatever may be the factors which underlie the occurrence of puerperal mortality in Scotland they are common to the varieties of social condition which characterises the population. Comparison of the mortality-rates in England and Scotland is not possible, because in England when associated conditions have been present the puerperal relation has been omitted.

Puerperal Fever.

In 1897 notification of infectious diseases in Scotland became obligatory and puerperal fever was included in the list of diseases compulsorily notifiable, and has thus been under the cognisance of the public health officers. On this important subject the Scottish Departmental Committee find as follows :—

> " *Sepsis.*—From several of the larger areas we have had submitted to us careful analyses of the experience of these officers with regard to the frequency of puerperal fever, its mortality and the conditions amidst which it takes origin. From this evidence it is clear that while cases of puerperal fever are found in which no obstetrical manipulation or even assistance has been rendered, such cases are very rare, and the frequency of the fever is in close relation to the presence of delay or difficulty in the labour. The incidence is greater in first labours, in labours where some form of laceration has occurred, and in labours which have been terminated by instrumental or manual delivery."
>
> " *Notification.*—Several witnesses have represented the view that the notification of puerperal fever is by no means complete, and that this is due to the idea that failure to prevent sepsis suggests faulty professional attendance, which makes a doctor regard unwillingly the recognition of cases as septic. We have also had evidence from Glasgow and elsewhere that the practice of notification is improving, and that as a result the apparent case mortality in the cases which come to the notice of the medical officer of health is diminishing. It is much to be desired that the notification should be as nearly as possible complete. Without this complete knowledge it is not possible to measure accurately the social importance of puerperal fever ; and in many areas the notification is now the first step to hospital treatment, which is effective in proportion to the shortness of the illness that has preceded its initiation."

Professional Attendance.

The second part of the report deals with the work of the medical practitioner and the midwife in respect of the needs of the mother, and with the very important subject of antenatal care. Inquiry into the relation of environment to puerperal morbidity and mortality showed, as similar inquiries have shown, that the effect of bad housing and overcrowding are not of much weight statistically in causing puerperal troubles, while underfeeding has no effective connexion with maternal mortality ; but the care needed on the part of the practitioner extends from early pregnancy till her restoration to the non-pregnant normal, and all the witnesses before the Committee have been unanimous in their evidence that the most important avenue to the prevention of maternal mortality and morbidity is through antenatal care.

Summary of Recommendations.

(1) That when death occurs during pregnancy or within four weeks after its termination the fact of pregnancy should be communicated to the registrar along with the fact of death.

(2) That representation be made to the International Committee concerned with the classification of causes of death with a view to securing uniformity of method as well as of nomenclature in compiling official statistics of puerperal deaths.

(3) That every local authority or combination of local authorities administering a scheme of maternity service and child welfare establish an antenatal clinic or antenatal clinics wherever there is a sufficient concentration of population to justify such a measure.

(4) That the antenatal departments at the maternity hospitals should be fully organised and provided with sufficient accommodation for observation, treatment, and teaching, and that such teaching be made an essential part of the practical work of both medical student and pupil midwife.

(5) That payment of maternity benefit be made conditional on the woman engaging a certified midwife or a qualified medical practitioner at least 12 weeks before the date of the normal term of delivery.

(6) That every local authority or combination of local authorities administering a scheme of maternity service and child welfare provide facilities for the testing of specimens of urine, and that where practicable this provision be made through the antenatal clinics.

(7) That local authorities should extend the assistance given to midwives by guaranteeing a minimum income to those whom they regard as satisfactory, and who depend on their earnings for a livelihood.

(8) That local authorities consider the desirability of paying a modified fee to midwives in respect of any cases lost to them by transfer to clinics and hospitals.

(9) That amendment of the Midwives (Scotland) Act be considered, with a view to removing the possibility of unqualified midwifery practice.

(10) That local authorities be empowered to furnish on loan sterile outfit and equipment at a reasonable charge, which should be remitted in necessitous cases.

(11) That the Central Midwives Board for Scotland be asked to consider the desirability of amending Rule E 21 so as to provide for the summoning of medical assistance for the repair of all tears of the perineum.

(12) That attendance of the student on antenatal cases should be organised and made compulsory.

(13) That consideration be given to the question of utilising the accommodation available in Poor-law hospitals for maternity cases.

(14) That legislation be considered to make the conduct of maternity homes illegal unless they are registered by the local authority and conducted to their satisfaction.

(15) That every death occurring within four weeks after the termination of pregnancy should be fully investigated by a person designated by the local authority, and the facts communicated to the Scottish Board of Health.

THE NUTRITIVE VALUE OF BREAD MADE FROM STANDARD FLOUR AND WHOLEMEAL FLOUR.

The question as to the nutritive value of bread made from flours of varying degrees of refinement is one which continues to attract the attention of medical officers and the responsible authorities of educational establishments, hospitals, and institutions.

The memory of the pre-war "standard bread" campaign furiously conducted by a daily paper is not forgotten, neither are the many exaggerated claims which were made at the time for the use of "standard" flour. In 1911 Dr. J. M. Hamill, of the Local Government Board, prepared a very interesting and comprehensive report on the nutritive value of bread made from different varieties of wheat flour. He summed up the advantages and disadvantages of using "standard" or "wholemeal" flour, but made no decided pronunciamiento in either direction.

Recently the governors of a well-known boys' public school sent us samples of wholemeal and standard flours and the loaves made from them and asked us to report upon them as regards their nutritive values. On analysis the following results were obtained :—

—	Wholemeal flour.	Wholemeal bread.	Standard flour.	Standard bread.
	Per cent.	Per cent.	Per cent.	Per cent.
Moisture..	15·6	36·0	15·96	34·8
Mineral matter ..	1·8	2·12	0·86	1·58
Phosphates (P_2O_5) in mineral matter	0·36	0·42	0·32	0·31
Fat	1·84	1·5	1·3	1·14
Proteins	10·5	7·8	9·10	7·05
Carbohydrates, starch, &c.	62·4	45·0	70·20	52·40
Matter not acted on by diastase, pepsin, and pancreatin ..	7·9	7·6	2·61	3·02
Energy value expressed as calories per lb.	1434	1047	1530	1155

In many analyses of this description it is customary to record the "crude fibre" figure, but in our opinion this affords little information from the nutritive standpoint, although it is of use in certain circumstances for diagnostic purposes when judging of the milling grades of different flours prepared from the same wheat. We do, however, attach considerable importance to that part of the bread which is unaffected by the enzymic activities of the digestive juices as, under normal conditions, such matter possesses no food value and would pass away in the fæces. Physiologically this residual matter, which consists mainly of the husk of the wheat corn, may be of some importance as it functions as an intestinal irritant and so counters constipation. This residual matter was determined by boiling the flour or bread with water, cooling to 55° C. and adding a sufficiency of malt amylase, the action being allowed to proceed for several hours. This treatment was followed by pepsin and finally by pancreatin, the reaction of the substrate being suitably adjusted for each enzyme. After the pancreatin digestion the residual matter was filtered, washed, dried, and weighed; a control digestion was carried out side by side using similar quantities of malt amylase, pepsin, and pancreatin, and the weight of insoluble matter found deducted from that in the flour or bread. This digestion in vitro is, of course, not identical with that which takes place in the human organism; it is, however, an approximation, and the results obtained are comparable amongst themselves.

The analyses recorded above show that from the food value point of view (calories per lb.) the standard flour bread is superior to the wholemeal. The proteins and mineral matter (including phosphates) are a trifle higher in the wholemeal loaf. The carbohydrates (starch, &c.) are more than 7 per cent. lower and the material resistant to the action of the digestive juices some 4·6 per cent. higher than in the standard flour loaf. On the evidence afforded by analysis alone it appears that of the two loaves the one prepared from standard flour is the better.

Analytical results in the chemistry of foods are not the whole story, and consideration must be given to the physiological and æsthetic standpoints. The physiology of this subject has been closely investigated by the U.S. Department of Agriculture, who reported that according to the results of experiments on man the proportions of digestible protein and the amount of energy actually available to the body were greater in the standard patent flour (straight run) than in the entire (wholemeal) flour. The importance of the æsthetic element in the digestion of food is well known, and it appears to be admitted by physiologists that food which is pleasant in appearance and palatable is digested more readily than if it were consumed in a less interesting form. In this connexion Dr. Hamill points out that due regard should be paid to individual taste in introducing, for example, a wholemeal bread into a dietary to replace a white bread, lest otherwise attempts at improving the diet may be rendered nugatory. From the same point of view an agreeable or characteristic flavour in bread, such as the "milky" flavour imparted by the germ, may have a distinct dietetic value.

A diet consisting wholly of bread is clearly undesirable, and even if the claims made for the dietetic value of offal (germ, husk, &c.) be admitted, the presence of offal in bread would only diminish and not abolish the monotony of a bread diet. If bread is supplemented with such other foods as usually constitute an average liberal mixed diet the advantages which one variety of bread may possess over another become, for dietetic purposes, practically negligible.

An objection frequently advanced against the use of white bread is the absence from it of the water-soluble vitamin B (anti-neuritic), but this only applies to bread made from patent grade flour which is very white and almost entirely free from husk and germ. The present standard flour is by no means of this high degree of refinement, and such objection therefore does not hold.

We are not of the opinion that the loaves made from either of the flours do the baker any particular credit as their texture is rough and they are both distinctly heavy. They have somewhat of an "institutional" appearance and would not be tolerated in the ordinary private household. This is a matter which could be set right, and in baking processes there must be room for variation in sample.

IRELAND.

(From our own Correspondent.)

The Free State Local Government Bill.

A further study of the Local Government Bill, 1924, of which a brief summary was published in The Lancet last week, strengthens the opinion that as far as the public health is concerned the principles of the Bill are sound.

Pensions for Medical Officers.—On the other hand, it has become clear that the conditions regarding pensions tend to put medical officers in a definitely worse position than heretofore. The Bill proposes to repeal Section 8 of the Local Government (Ireland) Act, 1919, which gave medical officers, under certain conditions, the right to a pension, as contrasted with the grant of a pension as an act of grace. Further, it is proposed to repeal all previous enactments dealing with pensions and superannuation. Under these enactments a medical officer was entitled, if granted a pension, to have a number of years added to his service in computing the amount of his pension. The present Bill contains no such provision.

Control of Medical Education and Registration.—One harmless phrase in the Bill has given rise to misunderstanding and questioning. In the recital of the duties of the Minister of Local Government, in his capacity as Minister of Public Health, there is included "the training of persons for health services." It has been suggested, among others, by the medical correspondent of the *Morning Post*, that this foreshadows the intention of the Minister to control medical education and registration. The entire paragraph in which the phrase occurs, however, is taken, almost verbatim, and the particular phrase verbatim, from the Ministry of Health Act, 1919, in which similar recitals are made of the powers and duties of the Minister of Health for England, and of the Chief Secretary as Minister of Health for Ireland. The Free State Minister, in fact, is only demanding for himself the same powers and duties as belonged to his predecessor, the Chief Secretary for Ireland. The exact meaning of the words has never been made clear, but it is presumed that the reference is to the training of sanitary inspectors and other such officials.

Proposed Abolition of Rural District Councils.—The Bill has received much opposition in the second reading debate in the Dail, the opposition being chiefly directed to the proposed abolition of rural district councils. There was no hostile criticism of the sections dealing with public health, and they received the warm support of Sir James Craig and others. So strong was the criticism, however, that President Cosgrave declared that after taking the second reading he would allow the Bill to rest until he had received the report of a commission to be set up to inquire into the whole machinery of local government. This means that the Bill cannot reach any further stages for several months. One may hope that in the meantime the Minister may be persuaded to prune it of some of its weaknesses.

The General Medical Council and the Free State.

Sir Donald MacAlister's statement as to the present legal relations between the General Council and the Irish Free State has come unexpectedly to the profession in Ireland, and has given rise to a good deal of panicky talk in the newspapers. It was always understood that the Government of the Irish Free State might at any time desire to take under its control the education and discipline of the medical profession, but it was not anticipated that, without the Free State Government making any move, any technical point would arise to interfere with the present status. So far from making any move in the matter the legislature of the Free State has in its constitution continued all Acts previously in force, including the Medical Acts. It is true that if it were made impossible for medical men qualified in Ireland to obtain access to the General Register, the Irish schools would be gravely damaged.

THE GERMAN SURGICAL CONGRESS.

(FROM OUR BERLIN CORRESPONDENT.)

THE Berlin Congress recently held under the presidency of Prof. H. Braun, of Zwickau, was well attended. The first official subject of discussion was the development of

The Surgical Treatment of the Organs of the Thorax,

the introductory address being given by Prof. F. Sauerbruch, of Munich. He said that the majority of surgeons have now adopted the over-pressure procedure in operations within the thorax. Concerning the individual operations, he stated that lesions of the heart, especially from gunshot wounds show a great mortality; sutures of the heart for injuries had hitherto not been very successful. Cardiac troubles caused by compression either by growths or by infundibular thorax have been successfully operated on by removal of the growth or by resection of the ribs or the sternum. Hæmorrhage of the pericardium has been cured by puncture of the pericardium or by pericardiotomy. Great advance has been made in the surgical treatment of the œsophagus; in impermeable stricture of the œsophagus plastic operations are generally adopted; in cardiospasm Heller's operation is now the best method. In cancer of the œsophagus the operation in two stages with the placing of the stomach into the thorax has been successful. He had himself succeeded in curing two diverticulæ of the œsophagus which had perforated into the lungs. The old rule to perform at once resection of a rib in cases of empyema had been abandoned owing to experience gained in recent epidemics of influenza where numerous cases in children and in adult persons had been successfully treated by plain puncture. Cases combined with gangrene of the lungs must, however, be operated on at once by large incisions. Old empyemata must be treated by the exhausting procedure designed by Pertes before a thoracoplasty is considered. The greatest progress has been made in operations upon the lungs. Of 71 cases of bullets in the lungs operated on by the author only three have died. Freund's chondrotomy in emphysema has only a very restricted indication. In bronchiectasis resection of the respective lobe has been successful, as of 11 cases 5 were cured and 3 died. In tuberculosis of the lung resection of the first to the eleventh rib by a paravertebral incision under local anæsthesia was successful, as one-third of the patients suffering from cavities could be cured in this way, a cure meaning that the patients had during four years afterwards no sputum and had resumed work. The mortality from the operation itself is 1 per cent., but 24 per cent. by spread of the tuberculosis to the other lung or by defective expectoration. He had operated on 700 patients in this way. The operation was preferable to artificial pneumothorax. In the course of the discussion Prof. Kirschner, of Königsberg, mentioned a case where after an operation for hernia an embolus had occurred; the patient was thereupon operated on at once after Trendelenburg's method by laying open the pericardium and the pulmonary artery, from which an embolus 17 cm. long was removed. The patient recovered and was shown at the Congress. Prof. Kümmel, of Hamburg, spoke on the cure of bronchial asthma by resection of the sympathetic nerve. The operation is indicated only in cases where the cause of the disease is suggested to be a pathological condition of the nerve. The nerve, together with the ganglion stellatum and the ganglion thoracicum, must be removed first on one side and when the attacks continue on the other side too. He had cured three cases by unilateral and four cases by bilateral operation; one case was unsuccessful and one patient died.

The second official subject for discussion was the

Operative Treatment of Fracture.

The introductory address was read by Prof. König, of Würzburg. According to him, operation is indicated in fractures accompanied by lesions of the soft tissues when the ends of the broken bones lie open; in fractures within or in the neighbourhood of joints; in fractures of the patella and the humerus; in fractures of the calcaneus, the trochanter, and other points of insertion of muscles, and in fractures of the forearm with strong dislocation. The operation ought to be performed as early as the end of the first week after the accident. Narcosis can often be dispensed with. Fixation can be obtained sometimes by plain impaction of the bones; sometimes pinning becomes necessary. Sutures with wire are to be recommended. Lane's splints are useful for fixation, and after fixation suture of the muscles and of the skin must finally be performed. Movements must be made very early; in fractures of the patella as soon as a week after the operation. The functional results were encouraging, although the healing process is slower than without an open operation. Stiffness of the joints has occurred in the speaker's cases in aged patients, but never in young ones. Prof. Steinmann, of Berne, stated that he had had bad results in operations of fractures of the femur, the mortality being 30 per cent.; he spoke in favour of extension by pins.

The third official theme concerned the

Transfusion of Blood,

the discussion being opened by Prof. Küttner, of Breslau. He discussed the different methods, direct transfusion by anastomosis of the artery of the donor with the vein of the patient, and indirect transfusion of blood with an addition of 0·2 per cent. of citrate of sodium. By the latter method blood may be preserved for four weeks, a circumstance which had proved very useful during the war. He discussed blood groups and methods of testing them. The principal indication for transfusion was acute hæmorrhage; in chronic hæmorrhage it not only restored the quantity of blood but also acted as a styptic. Good results were obtained by transfusion in cholæmia and in pernicious anæmia; in leukæmia, however, the results were doubtful, as also in septic processes and in cachexia. In poisoning with carbon monoxide and coal-gas, in pellagra, in melæna of newly-born children the results were satisfactory, but in hæmorrhage from enteric fever, in Werlhof's disease, in uræmia, and in eclampsia the results were not encouraging. In hæmophilia the anastomosis between donor and patient was the specific treatment, and cannot be supplanted by indirect transfusion of blood with a citrate of sodium solution. In relapses the proceeding might be repeated without harm. In the discussion Prof. Anschütz, of Kiel, drew attention to the favourable action of the pre-operative transfusion as a method of improving the resistance of the patients. Dr. Bätzner, of Berlin, reported experiments carried out by him by which it was shown that the cause of death from hæmorrhage was not the loss of blood itself, but an intoxication produced by an insufficient combustion of toxic products. By transfusion the product of toxic substances was diminished.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Sydenham Celebration.

IN his address on Thomas Sydenham, delivered before the French Academy of Medicine, Prof. A. Chauffard gave a scholarly account of the life and works of the great English physician, of which the following is a very brief résumé. Thomas Sydenham was born on Sept. 10th, 1624, at Wynford Eagle, and passed his youth in the troublous times of Royalist and Parliamentary dissensions. The Sydenham family were staunch supporters of Cromwell. At the age of 18 Thomas Sydenham went to Oxford University, but political discords played havoc with his studies, and though he qualified Bachelor of Medicine in 1648, as the Civil Wars followed each other he was by turns student and Roundhead captain. In 1655 he married, and the following year set up in medical practice in Westminster. In 1659 Sydenham visited the Faculty of Montpelier, where he studied under a physician highly renowned at that time, Barbeyrac, an enthusiast for the school of Hippocrates which was followed at Montpelier, while Paris adhered to Galen. In 1661 he returned to work in London, three years before the Great Plague broke out. Sydenham's action of leaving the "charnel house which London became" was the only regrettable incident of a noble life. At this time Sydenham produced the first of his works, the "Methodus Curandi Febris." "In this book," said Prof. Chauffard, "which is so personal a record, there are no quotations from authors, no burdens of erudition, nothing but clinical facts . . . this is the pure Hippocratic tradition." The fevers which Sydenham observed were probably typhoid, typhus, and malaria, rampant in the London of those days. In addition, Sydenham's description of small-pox has remained a classic.

In 1683 appeared what is perhaps his most famous work, the treatise on gout and dropsy, and three years later he described that condition since known as Sydenham's chorea. In it conciseness the description is perfect, and the work in which it was published was Sydenham's last, for he ended the book by declaring that he had told all he knew concerning the treatment of diseases. "Is it not touching," comments Prof. Chauffard, "to see this great observer himself recognising and admitting that he had reached the limits of his knowledge, and entering thus into the silence and the serenity of a man who, after long labour, considers his task as finished?" Sydenham died on Dec. 29th, 1689, worn out by the two enemies which had long harassed him—gout and gravel. His own symptoms and sufferings from renal calculus he depicted with striking exactitude.

Such was the life of Sydenham, chequered in youth by the civil discords of the times, but later a record of calm, unbroken work and devotion. He sought neither honours, nor public service, nor a professorial chair. Nor did he even hold a hospital appointment: he knew no other ambition than to examine his patients thoroughly, to tend them with his best skill, and to give the results of his observations to the medical public. Before everything, he was a great practitioner. Prof. Chauffard then discussed in greater detail the principal features of Sydenham's work, and showed how, both in methods of observation and in therapeutics, Sydenham "taught medical men to dare to think for themselves."

Prophylaxis Against Measles.

Measles is particularly serious in the case of infants, as more than three-quarters of its victims are children who have not reached their second year, especially in the poor quarters of towns where the hygienic conditions are defective. The prophylactic injection of convalescent serum has been found, if not to give complete protection against measles, at least definitely to modify the disease. Dr. Robert Debré, who is trying to bring this method into widespread use, recently indicated to the Academy of Medicine the lines on which a centre might be organised to collect, prepare, and control the serum of convalescents. This centre would work in conjunction with the hospital services. Dr. Debré proposed that prophylactic centres against measles should be created throughout France, with the object of collecting the serum, of controlling its effectivity, and distributing the necessary doses. He suggested that this method might equally well be adopted in a fight against whooping-cough.

NOTES FROM THE U.S.A.

(FROM A CORRESPONDENT.)

IOWA STATE MEDICAL SOCIETY: NEED FOR SOLIDARITY.

THE seventy-third annual session of the Iowa State Medical Society was held at Des Moines, Iowa, on May 7th, 8th, and 9th. Dr. Oliver Fay, in his presidential address, spoke of the necessity for solidarity in the medical profession in the face of quackery and also unfair State interference, citing in the latter connexion the success of the profession in Great Britain in the recent panel controversy.

Amongst a number of interesting papers read was one by Dr. Abt, of Chicago, on the

Diseases of Twins.

Referring to the rarity of investigation in this interesting field, Dr. Abt said that since Galton's memorable studies no investigation had been conducted on the pathological aspect of twins. The *British Medical Journal* of 1912 contained a very interesting and suggestive editorial on twinship and fame. The editorial was suggested by the remarks of Dr. Kaiser, of Dresden, who stated that he knew of no famous man who had a twin brother. A similar query had been raised by Simpson in the *Edinburgh Medical Journal* of 1862. Simpson was not aware of a single instance in which a twin had distinguished himself intellectually. The editorial writer took issue with these two gentlemen and went on to show that there were several twin brothers who had won more or less fame. In attempting to collect information on this subject it was found that no records of morbidity or mortality in twins were available. According to Grasst, multiple pregnancies are neither atavistic nor the result of variation, but simply indicate excess of natural fertility. Newman pointed out the disadvantages of twinning by saying that when two or more fœtuses come to occupy the space usually filled by one, there is crowding and competition for common food-supply or placental site. On this account, of uniovular twins, one—the successful one—may be strong and healthy at birth, the other weak and delicate physically and defective mentally. Congenital malformations are fairly common and usually occur in both twins. Prematurity, for obvious reasons, is relatively frequent in twin pregnancies, so that rickets and kindred disorders are of high incidence. Occasionally one of the twins will succumb and the other remain free or develop the disease later. Alfred Hess states that twins—even full-time —have a special tendency to develop rickets. The mental affections of twins do not differ in form or frequency from those of other individuals, but when insanity develops in both twins the form is nearly always the same. There is often a marked difference shown in resistance to infection. Cases are reported where one of the twins showed congenital syphilis, while the other remained free. In regard to mortality, twins are said to have 13 times less chance to live than single newborn infants. After the fifth year the mortality of twins and non-twins is the same. In conclusion, Dr. Abt drew comparisons between himself and his twin brother.

Dr. Hubert A. Royster, of Rayleigh, North Carolina, gave an address on the

Philosophy of Surgery.

The speaker defined the philosophy of surgery as the fine adjustment of the higher instincts upon the *n*th power of surgical art and science. Above other men the surgeon needed the philosophical spirit. All great art represented something that it saw or believed in. How true this was of surgery! It saw what was actually accomplished—and more—what was intended; it believed in what was to be done. It was difficult to conceive of surgery without vision and faith. Not all the best of surgery was accomplished in the largest clinics or by the busiest operators. The surgeon who counts was not always the one who was doing the most work, but the one who was doing the most of the best work. In every true surgeon there was a constant effort to strike a proper balance between judgment and technique, between diagnosis and management, between pathology and performance. The sum of our philosophy, he said, was this: The surgeon would do well to bear in mind that his mission was to restore if he could, and only to destroy if he must; that his duty was to keep sweet in the midst of both success and of disaster, of praise and of censure—and the smaller his habitation, the sweeter he should keep; that moral courage was a more precious asset than physical prowess, and that it often required more bravery to desist from an operation than to proceed with it; that sordid commercialism in any degree would corrupt his professional life and poison his soul, be it the buying and selling of patients or other debasing financial practices; that it was his privilege to perfect himself in the science and art of his calling to the end that he might be of use both in knowing and in doing, not omitting to tune his conscience and his judgment to the highest pitch; that individual thinking combined with an understanding and a concurring spirit would bring the largest benefit; and that he must carry on his career in his own way, emulating, not imitating, the best he found in others who had passed along the road.

Dr. Emil Mayer, of New York City, read a paper on the study of

Affections of the Nose and Throat

with special reference to the diagnosis of affections in other parts of the body. The speaker discussed a number of conditions of the nose and throat giving rise to generalised symptoms which yield to simple treatment of the cause. Thus, in cases of persistent coughing without râles, examination of the nose and throat should always be resorted to, when an elongated uvula, foreign body in the ear, or other defect will not infrequently be found, the removal of which leads to cure of the condition. In regard to the diagnosis of generalised disease, tuberculosis often appears primarily in the nose and throat, and may sometimes be noticed here before it would otherwise be suspected. Small canary-yellow exudates appearing in the mouth, palate, tongue, cheeks, or lip are not infrequently the earliest sign of this disease. Inter-arytenoid thickening is another early sign. Primary syphilis may occur on the lip, tongue, or tonsil, while Koplik's spots, as is well-known, afford the earliest diagnostic sign of measles. A number of other conditions were mentioned in which the diagnosis is made from nose and throat examination.

MALVERN AS A HEALTH RESORT.

THE pleasant group of townships known as Malvern, terraced on the lower eastern slopes of the Malvern heights, was the object of a pilgrimage by representatives of the daily and weekly press of the country during the last week-end, who, as guests of the town and of the Great Western Railway Company, examined the claims of this famous Worcestershire residential district to a high place in the ranks of English health resorts.

Malvern's fame, which was as high in the latter part of the last century as it is now, when many other centres compete with it, rests on a triple basis—its situation, its climate, and its waters. The waters have been recognised for nearly 300 years as being of exceptional purity, which recent analysis, showing an almost entire freedom from organic matter, fully confirms. Their value lies in their very purity and in their non-mineral character, which renders them applicable in gout and the rheumatic diathesis. The water bubbles from springs situated above the town, and a short but healthful climb brings the patient to the Pump Rooms of St. Ann's Well, which was built over 50 years ago. It is, perhaps, in its situation and climate that the resort makes its strongest appeal to the seeker after health and quiet. The chief advantages of Malvern result from its famous position on the gentle slopes of an easily accessible range of hills which, while it extends over nine miles and reaches at the highest point to 1400 feet above sea-level, is provided with good roads and easy hill paths, offering opportunities for every degree of pedestrian activity. Thus Malvern may well be regarded as a hill station especially adapted for cardiac conditions requiring graded exercises, and for convalescence from acute conditions. The moderate elevation of Malvern suffices to raise it above many of the fogs which so often cover the plains or river valleys of England in the autumn and winter, and during the last week-end, when the flooded Severn, Avon, and Teme, following the furious rains of Saturday and Sunday, spread desolation over the plains, inundated the fields, and plunged the city of Worcester, eight miles away, into darkness and inactivity, Malvern escaped unscathed. Indeed, the rain did not deter some of the more active of the inspecting party from climbing to the Herefordshire Beacon, round the top of which the ancient British camp extends its triple line of entrenchments, and on Monday morning, when the sun shone again, a drive over the rapidly drying roads of the Heights, through a fresh and stimulating air, offered a panorama on the one side of "county upon county of rich sylvan England, mansioned, abbeyed, towered, spired, castled," and to the westward the mountains of Wales rose in the distance.

Apart from its bracing air and large measure of sunshine, Malvern affords good hydro- and electrotherapeutic facilities. The following baths, among other kinds, may be obtained: Shower, spray, sitz, brine, soda, sulphur, pine extract, Nauheim, spinal wave and ascending douches; Russian vapour, radiant heat, electric light. Plombières lavage, massage and electrical treatment of various kinds may be had at the several special establishments. Malvern Hydropathic was the first institution for hydrotherapy to be built in England, and has kept well abreast with modern developments. The town has at present a scheme in hand for the provision of a swimming-bath and hot baths supplied with Malvern hill waters. Ample provision is made for various sports; the tennis courts at Manor Park are particularly fine, there is a good golf course, and three packs of hounds hunt in the neighbourhood.

It is such British health resorts as Malvern that offer to the visitor the charm of restful days in ideal climatic conditions that may be sought in vain among the more populous and the gayer spas, not only of the continent, but also of Britain.

SIR MALCOLM MORRIS MEMORIAL FUND.

THE hon. secretary of the committee, Dr. Howard Mummery, reports a very satisfactory response to the appeal published on May 10th in our columns for the above Fund and there is every hope that its objects will be achieved. Subscriptions have already been received from the following :—

Lady Alexander.

Dr. R. A. Bolam, O.B.E.; Botolph Printing Works; Mr. Philip Bright; British Humane Association; Dame Sidney Browne, G.B.E., R.R.C.; Miss M. M. Brumhead, Mr. R. Byers, J.P.

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Mr. Thomas Young.

The total to date is £252 13*s*. Further subscriptions will be gratefully acknowledged if forwarded to the Hon. Treasurers, "Sir Malcolm Morris Memorial Fund," at 12, Stratford-place, London, W. 1.

Correspondence.

"Audi alteram partem."

VOLUNTARY HOSPITALS COMMISSION: EXTENDED INQUIRY.

To the Editor of THE LANCET.

SIR,—In the summer of 1922 the Voluntary Hospitals Commission decided to convene a conference of representatives of local voluntary hospitals committees, which was held in July at the Ministry of Health. The conference was very well attended, and I think representatives from practically every voluntary hospital committee in England and Wales—and many of those in Scotland—were present. The discussions which took place were of great value to the members of the Voluntary Hospitals Commission, whose main pre-occupation at that time was the distribution of the Government grant of £500,000 in aid of the deficits on the maintenance accounts of the voluntary hospitals. That task has now been accomplished. Since that date a fresh, and perhaps even more difficult, task has been placed upon the Commission by the present Government. Fresh terms of reference have been given to them which are as follows: "The Voluntary Hospitals Commission are requested to inquire into and report upon the extent of the additional voluntary hospital accommodation required in England and Wales and the best means of providing and maintaining it."

To obtain sufficient data on which to base a useful report will require considerable investigation. The Commission have already sent out a questionnaire in regard to matters on which it occurs to them that information should be afforded, but it is felt that it would be of the utmost value if a full discussion could take place with the representatives of the local voluntary hospitals committees as to the best methods by which this investigation could be carried out. A conference will be held at the Ministry of Health on June 18th at 10.30 A.M. It is earnestly hoped that all local hospital committees will be officially represented, but in addition all members of committees will be very welcome if they care to attend. I may add that although the new terms of reference and the best method of giving effect to them will be the most important subject of discussion, some of the committees have put down other matters which they desire to have considered and these will also be discussed.

I am, Sir, yours faithfully,
ONSLOW,
Chairman.

Whitehall, S.W., May 30th, 1924.

"INDUCTION" OR "CAUSE" OF CANCER.

To the Editor of THE LANCET.

SIR,—It will be well to realise that factors that induce carcinoma belong to quite a different category from those that cause it. So many writers are confusing the two processes by describing them under the one term, "cause," as if the factors of induction were the same as those of causation. They are not; for example, the slightest push may induce a ball to roll downhill. The push only induces the ball to roll. The precise nature of the various factors that cause a ball to roll downhill are subjects of acute controversy amongst the profoundest intellects of our time. When discussing carcinoma, if certainty could be arrived at as to the actual factors that induce it, no doubt a great advance would be made in our conception of the disease. If certainty could be arrived at as to the actual cause of carcinoma, the problem "What is Life?" would be solved. It will be well to recognise that the induction and cause of carcinoma are quite separate processes.

I am, Sir, yours faithfully,
G. LENTHAL CHEATLE.

Harley-street, W., May 31st, 1924.

TOXIC EFFECTS OF LOCAL ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—Dr. Dan McKenzie deserves our thanks for setting forth his method of using pure cocaine hydrochloride powder mixed with sufficient adrenalin solution to form a mud or paste for direct application to the nasal mucosa for producing local anæsthesia. Further, that thus applied he habitually uses as much as 4 to 6 g. of cocaine for each case, and never has he had one single case of cocaine poisoning. Assuming that this is the cocaine paste referred to in the report of the committee of the American Medical Association which they recommend "should never be used," Dr. McKenzie's letter is a timely and authoritative protest against such sweeping general statements.

Yet it seems curious to find that Dr. McKenzie goes on to lay down "a rule that cocaine, whether in powder or in solution, should never be employed without adrenalin." The need for caution in the exhibition of all local anæsthetics must be borne in mind, nevertheless many of Dr. McKenzie's colleagues regard it as one of the unrivalled advantages of cocaine over all other local surface anæsthetics that cocaine may be used for light anæsthesia of the nasal mucosa without the disadvantages accruing from the application of adrenalin. Probably Dr. McKenzie referred to the use of strong cocaine application for pronounced degrees of anæsthesia, but if this be so, it only emphasises the need for care in avoiding such generalisations as Dr. McKenzie himself condemns and which tend to hinder rather than help us in arriving at sound conclusions.

I am, Sir, yours faithfully,
PATRICK WATSON-WILLIAMS.
Clifton, Bristol, June 2nd, 1924.

MALARIAL TREATMENT OF GENERAL PARALYSIS.

To the Editor of THE LANCET.

SIR,—In your leading article of May 24th it was stated that ". . . we are at a loss to understand how the cerebral sclerosis and the degeneration of the nervous tissue can be permanently affected" by the malarial treatment of general paralysis. It is, however, unlikely that the lesions are affected.

In a limited experience of about 30 general paralytics treated with malaria, I have noticed that the physical signs known to depend upon a lesion of a definite locality of the nervous system, such as the Argyll Robertson pupil and the loss of ankle-jerks, remain the same after treatment as before, although the tremor, the slurring of the speech, and the abnormal mental state may have vanished and the general physical condition greatly improved. So far as I am aware, no reports have been published of the pathological condition of patients treated with malaria who have died of intercurrent disease whilst improving as regards the general paralysis, so it is impossible at present to be sure whether the structural organic lesions of the nervous system are affected. The pathological condition in a case of advanced general paralysis who had been treated with malaria and had subsequently died of the paralysis does not assist us, as the typical appearances of the untreated paralytic would presumably be found as the patient had died from this disease. As regards the macroscopical appearances, I found this to be the case in one such instance. The microscopical examination is not yet completed.

Therefore, if other observers have also found that the physical signs known to be dependent upon organic disease of the nervous system persist after the malarial treatment, it would appear that the destruction of the nervous tissue is not healed, at any rate, as regards the power of functioning. It would be interesting to know what has been found in this connexion at other institutions.

It should be added that although it is possible for a neurone to be functionally deranged without being organically destroyed, as probably occurs in the earlier stages of disseminated sclerosis, presumably this would precede the organic lesion in general paralysis. Therefore this functional derangement would be likely to occur in extremely early cases only, and then probably not as regards all the signs.

I am, Sir, yours faithfully,
G. DE M. RUDOLF.
Claybury Mental Hospital, May 28th, 1924.

GASTRIC AND DUODENAL HÆMORRHAGE.

To the Editor of THE LANCET.

SIR,—The paper by Dr. A. F. Hurst in THE LANCET of May 30th contains many useful suggestions for treatment in this serious emergency—e.g., rest, starvation, neutralisation of acid; but washing out the stomach, however skilfully performed, seems to me rather dangerous. In my judgment, however, Dr. Hurst overlooks the one essential fact—that gastric and duodenal ulcers are secondary results of trouble in the ileo-cæcal region and in the large intestine. This is a commonplace of medicine to those who are conversant with Sir Arbuthnot Lane's doctrine of stasis, but even those who have not yet wholly accepted stasis agree that gastric and duodenal ulcers are secondary to mischief lower down. I have searched Dr. Hurst's paper in vain for any sign of a recognition of this fact so essential to effective treatment.

Surely the first step, after putting the patient to bed, is the evacuation of the intestines by enemata. I venture to assert that this one step is more effective in arresting gastric or duodenal hæmorrhage than all the local measures advocated by Dr. Hurst. He draws an analogy between the stomach and the uterus. The analogy is partially true of the healthy stomach which *does* contract when empty, and does reduce its lumen to a small size, though never to zero like the uterus. My experience with bismuth and X rays in gastric ulcer shows that the stomach is invariably dilated and dropped. It does not contract when empty, and cannot until a long course of treatment (for three weeks or more) by rest in bed, enemata, &c., has overcome the duodenal distension and pyloric spasm which are keeping the lumen of the stomach widely open.

I am, Sir, yours faithfully,
ALFRED C. JORDAN.
Upper Wimpole-street, W., June 2nd, 1924.

CRIMINAL RESPONSIBILITY OF THE INSANE.

To the Editor of THE LANCET.

SIR,—Will you allow me to correct an error that has crept into your otherwise excellent summary[1] of my remarks at the Section of Psychiatry of the Royal Society of Medicine? I am reported as saying that "a great point about such impulsive states as epileptic insanity and puerperal mania was, not that the obsessions constituted irresistible impulses, but impulses resistible which had not been resisted."

I am afraid these words must have puzzled your readers. They suggest that I propounded the view that the violent impulsive actions of epileptic and puerperal insanity are controllable by penal sanctions—which is absurd. What I did say was that where, as in the case of epilepsy and puerperal mania, the degree of impulsive action is high enough to be described as "irresistible," it is difficult to say that the patient knows or appreciates the nature and quality of the act. Consequently such cases are quite capable of being brought within the law as stated in the McNaghten rules. There is nothing novel in that point. It was made 50 years ago by Fitzjames Stephen.

On the other hand, in regard to such states as are merely obsessional, I said that it was impossible on legal or logical grounds to describe the impulses to which they gave rise as "irresistible." We know that such impulses are powerful, but we also know that they can be and are resisted. There is nothing new in that either. Mercier and many others have pointed it out. What I wanted to emphasise was that the doctrine of "irresistible impulse" was of no value, for it could not properly be applied to any case that is not within the four corners of the existing law. I am, Sir, yours faithfully,

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[1] THE LANCET, May 24th, p. 1057.

Donald Carswell.

New-square, Lincoln's Inn, May 26th, 1924.

A COUNTY VENEREAL DISEASES SCHEME.

To the Editor of The Lancet.

Sir,—Being interested in venereal diseases, and in charge of a municipal clinic, I read the article on this subject by Dr. J. J. Butterworth in your issue of May 24th. I was, however, surprised to find his laborious piece of statistical work lacking in important details, and so rendering his Tables II., III. (B) (C) misleading and in part valueless. Dr. Butterworth divides the attendances at the V.D. clinic into (1) those who complete the full course of treatment, and (2) those who ceased attending before completion of treatment. Unfortunately, he does not give the slightest indication of what "the full course of treatment" is. Does he mean one course of eight or ten injections or does he mean several? In the headings of his tables he speaks of "final tests as to cure," and "persons discharged from the clinic after completion of treatment and observation." What does this mean in dealing with syphilis and soft chancre? How long has he kept the patients under observation?

Take syphilis: When does he have complete confidence "to discharge patients from the clinic" which is tantamount to discharging them as cured? Is he satisfied with a negative blood Wassermann for 3, 6, 12 months or more? How long does he keep his soft sores under observation? Without some reasonable information on these points, some of his tables as they stand are, to my mind, quite valueless to others, and I feel it is a pity he has spoiled part of his labours by neglecting what to me are essential details in work of this kind.

I am, Sir, yours faithfully,

W. Herbert Brown.

Glasgow, May 29th, 1924.

MEDICAL TREATMENT OF CATARACT.

To the Editor of The Lancet.

Sir,—I have read with much interest the article by Dr. Inglis Taylor on the above subject, as I have been myself for several years in the habit of using medical treatment for incipient senile cataract. Where the patient can come to me regularly I use subconjunctival injections of cyanide of mercury, 1 in 5000, with 4 per cent. solution of sodium chloride, injected about once a week for about three months. When the patient lives at a distance I prescribe a collyrium of pot. iod. and sod. iod. each ʒiiss. to a pint of water to be used for five minutes twice a day; vasogen of iodine to be rubbed round the eyes at bed-time.

I hope to tabulate my results some day, but not having time to do so just now I will give briefly the result of my first case treated by the subconjunctival method, the result of this case being typical of many others and being apparently permanent.

Mrs. T., aged 50, consulted me on April 27th, 1918, complaining that the sight of her left eye had been failing for a year. Vision was 6/12 (2), not improved by glasses. Examination revealed an incipient cortical cataract. I gave her a subconjunctival injection once a week. By June 12th vision had improved to 6/9 (4), and by August 28th, when I ceased injecting, it was 6/6 (5), improved to 6/5 (3) by −0·50 spher. Now, after nearly six years, the vision remains the same.

With the pot. iod. treatment the results were good, but not so striking as with the subconjunctival injections.—I am, Sir, yours faithfully,

Seaghan P. MacEnri.

Averard, Galway, May 27th, 1924.

THE TERM "HÆMOCHROMOGEN."

To the Editor of The Lancet.

Sir,—Some years ago in a joint paper (*Biochem. Jour.*, xiii., 1919, 195), Dr. O. Rosenheim and I entered a protest against the continued use of the term hæmochromogen as a synonym for reduced hæmatin. The former word, introduced by Hoppe-Seyler, is illogical—for the substance is not a chromogen; and unnecessary—for Stokes's original name correctly describes it. This simplification of nomenclature was originally suggested on behalf of students, but Prof. A. V. Hill's lecture (The Lancet, May 17th, p. 994), where he confuses it with hæmatoporphyrin, is a demonstration that these long words are perplexing to teachers also. Many who read the original lecture may not see the correction in your issue of to-day.—I am, Sir, yours faithfully,

W. D. Halliburton.

Marylebone-road, London, N.W., May 31st, 1924.

VACCINE FOR ENCEPHALITIS LETHARGICA.

To the Editor of The Lancet.

Sir,—It may be still open to question whether or no encephalitis is simply "influenzal" meningitis, but one clinical fact that makes me believe this is that in the one instance in which I used an "influenza" compound vaccine, out of three cases under my direct observation since 1918, the "apparent" result was very striking, and the patient made a good recovery. The patient herself is convinced that the vaccine was the factor that turned the scale in her favour. The formula was that used in the R.A.M.C. during the 1918 "influenza" plague, and in the dearth of any other specific remedy it is surely worth while trying this vaccine in other cases.

I am, Sir, yours faithfully,

Leamington Spa, May 27th, 1924. J. Pirie, M.D.

TARTAR EMETIC IN BILHARZIASIS.

To the Editor of The Lancet.

Sir,—Mr. J. E. R. McDonagh alleges inaccuracy in the footnote on p. 1071 (The Lancet, May 24th). There is none whatever. With regard to priority for first having given the injections, readers of The Lancet interested in the matter are referred to the *Journal of Tropical Medicine and Hygiene* for June 15th, 1923. In the article entitled the Antimony Treatment of Bilharziasis will be found all I wish to write about my share in the discovery or re-discovery of the remedy.

I am, Sir, yours faithfully,

J. B. Christopherson.

Devonshire-place, W., May 31st, 1924.

ST. MONICA HOME OF REST, BRISTOL.

To the Editor of The Lancet.

Sir,—I am anxious to bring to the notice of any persons who may be described as gentlefolk in poor circumstances the benefits which are intended for them by my late husband, Mr. H. H. Wills, the founder of this institution, and should be very grateful if you would enable me to do this through the medium of your columns.

The object of the St. Monica Home of Rest, Westbury-on-Trym, Bristol, is to receive as inmates gentlefolk who are members of the Church of England, suffering from certain chronic or incurable ailments, being in needy circumstances and having led honourable lives. The council of the home have also power to give financial assistance to a limited number of persons who cannot be accepted as inmates. Preference will be given, in both cases, to those having family or residential associations with the city of Bristol or the counties of Somerset, Gloucester, and Wilts. Persons mentally afflicted, epileptics, sufferers from an infectious or contagious complaint, or from cancer or other forms of malignant disease are not eligible for admission to the home. Persons mentally afflicted, beneficiaries of other charitable institutions —so long as they are in receipt of such benefits—recipients of State aid (other than earned pensions) or of assistance from the rates are ineligible for financial assistance.

The home will probably not be ready for the reception of inmates till the end of this year at the earliest, but, in the meantime, the council are prepared to grant financial assistance to a limited number of qualified persons prior to the completion of the home. All inquiries should be addressed to Mr. W. W. Ward, Merchants' Hall, Bristol, the treasurer of the institution.

I am, Sir, yours faithfully,
MARY MONICA C. WILLS,
President of the Home.
Clifton, Bristol, May 20th, 1924.

THE PSYCHOLOGY OF VERTIGO.

To the Editor of THE LANCET.

SIR,—With reference to some recent correspondence in THE LANCET concerning psycho-analysis, I beg for space to indicate the letter on vertigo by Dr. W. H. B. Stoddart in your issue of May 24th as a striking example of the *argumentum in circulo*, lately proved in the books by Dr. A. Wohlgemuth and Dr. P. McBride to pervade the current literature of psycho-analysis from Freud's works onwards. This letter is a complete circle of dialectic beginning, continuing, and ending exclusively in unverified assumptions.

I am, Sir, yours faithfully,
London, May 28th, 1924. H. BRYAN DONKIN.

To the Editor of THE LANCET.

SIR,—My attention has been directed to a very remarkable contribution towards the much discussed questions of vertigo and sea-sickness by Dr. W. H. B. Stoddart. In my early youth a pious nurse used to tell me that evils such as these were due to the direct intervention of the Prince of Darkness. My medical studies and experience had inclined me to believe that such symptoms might be traced to organs such as the semicircular canals, the cerebellum, possibly also to the cerebrum and stomach. In the light of Dr. Stoddart's letter I am led to reflect that perhaps his psyche and unconscious may be what my old nurse used to designate more shortly "Satan." Such an explanation would at least have the merit of simplicity. Let me recommend your readers after carefully studying Dr. Stoddart's letter to draw their own conclusions.

I am, Sir, yours faithfully,
Harrogate, May 28th, 1924. P. MCBRIDE.

PUERPERAL SEPSIS.

To the Editor of THE LANCET.

SIR,—In his useful address on puerperal sepsis, published in your last issue, Mr. Beckwith Whitehouse, under the heading of General Treatment (p. 1095), states :—

> "As I have noted previously, cases occur where the infecting agent is so virulent that the patient is dead almost before treatment can be instituted. I remember one such instance some years ago. I was called to see a primipara, confined 24 hours previously, who had a temperature of 104° F. She was covered with an erythematous rash and died the following morning within 48 hours of the labour. A diplococcus, apparently the pneumococcus, was present in the blood."

All sections interested in clinical and bacteriological diagnosis will agree that the finding of the pneumococcus does not establish the diagnosis of puerperal sepsis. There is strong clinical evidence that a fever in the first 24 hours after childbirth, such as Mr. Whitehouse illustrates, is more consistent with an illness of extraneous origin—e.g., scarlet fever. Until special clinical equipment in hospital has been long and widely in operation doubt must be attachable to every set of statistics and every series of statements.

I am, Sir, yours faithfully,
Liverpool, June 2nd, 1924. HENRY BRIGGS.

To the Editor of THE LANCET.

SIR,—Mr. Beckwith Whitehouse, in his recent paper on puerperal sepsis, refers to observations of mine carried out "at Queen Charlotte's Hospital." I wish to point out that this is an error; all my work on this subject has been carried out at the London Hospital. Regarding his practice of "lightly" curetting the uterus followed by frequent irrigation of the uterine cavity by the Carrel-Dakin method, I am not opposed to it if it can be carried out by an expert early and under ideal conditions. The principle of excising the infected wound area is undoubtedly correct, but I think it is impossible to do this when infection has been present in the uterine cavity more than a day or two; in such cases, therefore, I consider it safer to remove debris with ovum forceps and a swab on a sponge-holder and to sterilise the surface of the uterine cavity with 2 per cent. iodine in spirit. The application of the Carrel-Dakin method afterwards is difficult in a patient who is having rigors, and may cause a good deal of fatigue. Thus, though my methods appear to differ from his, I certainly agree with him in theory. With his experience of the success of intravenous medication I entirely agree.

I am, Sir, yours faithfully,
S. GORDON LUKER.
Park-crescent, W., June 3rd, 1924.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

ROYAL NAVAL VOLUNTEER RESERVE.

Prob. Surg. Sub-Lt. G. F. S. Parker is promoted to Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

TERRITORIAL ARMY.

Lt.-Col. A. W. Moore, from Gen. Hosp. List (Supernumerary), to be Lt.-Col., and to commd. the 48th (1st Southern) Casualty Clearing Station.

Capt. A. J. Gibson to be Maj.

Capt. E. S. Stork, having attained the age-limit, is retd., and retains the rank of Capt.

2nd Lt. B. G. Thompson, from Gen. List, T.A., to be Lt.

A. M. Cooke to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. W. S. Forbes to resign his commn. and to retain the rank of Capt.

ROYAL AIR FORCE.

Flight Lt. S. E. Elphick resigns his permanent commission.

MENTIONED IN DESPATCHES.

The names of the undermentioned have been brought to notice for distinguished service during the operations in Waziristan, January, 1922, to April, 1923, by His Excellency General Lord Rawlinson of Trent :—

Royal Army Medical Corps: Lt.-Col. W. M. H. Spiller, Majors A. Irvine-Fortescue and C. H. Stringer, and Capt. B. C. O. Sheridan.

Indian Medical Service: Maj. D. C. V. FitzGerald, Capts. G. M. Moffat, F. R. Thornton, and C. J. Stocker; and Temp. Capt. K. G. Mohile.

MEDICAL STUDENTS AT DROITWICH.—By invitation of the Trustees of the Corbett Estate, who own the brine baths, a party of 45 medical students from Birmingham University visited Droitwich on May 31st in charge of Dr. Douglas Stanley, lecturer in therapeutics at Birmingham University. The party was conducted round the baths by Dr. J. Wilkinson and Dr. F. I. Dawson (the local representatives of the International Society of Medical Hydrology), Dr. M. Campbell, and Dr. C. F. Curtis, and the majority of them enjoyed a dip in the brine swimming-baths. Demonstration was given of the method of administering brine treatment for rheumatic and other systemic conditions.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives some of the principal statistics for 1923 of eight districts varying in type, the annual health reports of which we have received :—

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Dewsbury C.B.	55,424	17·0	14·0	0·8	1·3	3·7	40	83	8·5
Hartlepool B..	21,570	26·4	14·9	1·6	—	4·0	44	108	3·5
Tunbridge Wells B.	4,370	13·9	14·2	1·0	2·1	1·7	27	50	Nil.
Barnstaple R.D.	18,270	16·2	12·1	1·4	1·7	1·0	—	40	3·3
Adwick-le-Street U.D.	13,420	32·7	10·2	0·8	0·4	2·6	—	82	4·5
Bentley-with-Arksey U.D.	14,010	26·9	10·2	1·2	0·8	2·3	—	74	Nil.
Thedwastre R.D. ..	8,480	18·7	14·6	1·3	1·5	—	—	50	6·3
East Stow R.D.	6,465	21·5	9·7	0·9	1·1	—	—	29	Nil.

Dewsbury.

Dr. Oscar M. Holden reports that respiratory diseases play a very prominent part in the causes of death and blames the impurity of the atmosphere in this county borough. In the sanitary inspector's report we read that only 31 observations were made of factory chimneys, and that in 13 instances warning letters were sent where black smoke was emitted for over ten minutes in the hour. It is evident from this that the Dewsbury council only play with the problem of smoke prevention. Dr. Holden records progress in the privy-conversion scheme. During the last four years 1000 privies have been abolished without cost to the corporation. At the end of the year there still remained 1341 privies and 127 pail-closets. Attendances have increased at the maternity and child welfare centres. Dr. Holden considers dried milk far preferable as an infant's food to fluid milk as delivered in towns, and believes that its wider use plays an important part in the reduction of infantile diarrhœa. More of the dried milk was paid for and less given away than in the previous year—" an indication of better employment." Moorlands Hall has been acquired and is to be adapted as a maternity home, and Dr. Holden is hopeful that its use may exert a favourable influence on the very high maternal mortality from child-bearing. A table is given showing that this mortality was 8·9 per 1000 births during the four years 1911–14, 7·2 during 1915–18, and 7·9 during 1919–22.

Housing has continued to occupy attention, and Dr. Holden tells us that the great demand is for houses with a large living room, two large bedrooms, bath-room, and scullery to be let at 5*s.* to 6*s.* per week, and that 500 such would readily find tenants. No doubt they would, but the scheme sounds likely to be a costly one for the rates. Dr. Holden tells us that Dewsbury, according to the Census figures, shows the greatest deficiency of rooms, and the highest proportion of the population living, more than two persons to a room amongst the large towns of Yorkshire. An estimate framed on the former basis showed that 3277 houses were needed at the time of the Census, and that only 182 have been built and occupied since the Census. In this estimate no allowance has been made for " unfit " and worn-out houses and blocks of unhealthy property. About 35 per cent. of all the houses are of the back-to-back type, and there are " not a few " of the worse type—viz., back-to-earth. There is a paucity of midwives in Dewsbury, and resort is had to handywoman help. The corporation have subsidised a former health visitor to practise midwifery in a district where the shortage is keenly felt. During the year a new voluntary nursing association has made a successful beginning.

Hartlepool.

Dr. William McKendrick tells us that a noteworthy event of the year has been the provision of facilities for bowling, tennis, &c., on the town moor, and the opening of the bathing pool, the shortage of accessible recreation grounds and the unsuitability of the shore for bathing purposes having been in the past detrimental to the health of the inhabitants. The Census returns show Hartlepool to have a practically stationary population. Thus, in 1901 it was 22,723; in 1911, 20,615, and in 1921, 20,997. In referring to the high infant mortality rate, a great part of which is due to bronchitis and broncho-pneumonia, Dr. McKendrick says one cannot avoid associating it with the prevailing poverty and vile housing conditions. The prolonged industrial depression, he says, has led to a profound mental depression amongst the poorer classes, and with this there has developed a repulsive callousness. The tuberculosis death-rate and notifications show a tendency to increase, and " this may be the first sign of the undermining effect of poverty on the health of the people." The fish refuse, which used to be sent to sea, is now sent by rail to a manure factory and has become a valuable article. The provision of a public abattoir is under consideration. The only houses built during the year were 30 required to complete the Cleveland-street area municipal scheme. All the houses in this scheme, numbering 121, are now occupied. An inquiry was held in March with regard to another scheme, which has now been sanctioned, and involves the erection of houses for 433 persons. The work of the infant welfare centre suffered during the year from the absence of a medical officer, but is now reviving. The premises are inadequate and the provision of better accommodation is under consideration. The health of the town continues to be menaced by poverty, and the continuance of the trade depression into the fourth year, says Dr. McKendrick, is bound to have dire effects on the rising generation. Vigorous and apparently successful efforts have, however, been made by both statutory and voluntary bodies to combat these effects.

Tunbridge Wells.

Dr. F. C. Linton reports with satisfaction that new premises have been obtained and are being adapted for the work of the chief maternity and child welfare centre, which has lately been carried out under great difficulties at the public health office. In October, public interest in hygiene was successfully aroused by a prize competition in mothercraft among the mothers attending the centres. At the prize-giving a popular health lecture was given by Dr. Elizabeth Sloan Chesser. The isolation hospital still lacks the extension of the administrative block, sanctioned in 1914, and another need is a motor-ambulance to replace the present ambulance for which horses are hired in the town. The school report shows that children with verminous heads do not decrease in numbers, and that eight prosecutions of parents for this offence were undertaken. Mr. Stuart Smith, the school dentist, is making good, the percentage of children treated having risen from 60 in 1922 to 72 in 1923, and this in spite of the fact that a small fee is now charged for treatment. Dr. Linton records a reduction in the number of children with defective vision, and expresses the opinion that this improvement is due to the disappearance of the effects of the defective diet and under-nourishment of the war years. Dr. Linton would like to see an open-air school or class established for physically-defective children. Meals are not provided at the schools, but soup-kitchens are open at several centres during the winter months, which are largely used by the school-children. Instruction in swimming is provided at the open-air baths, and special terms are granted for the admission of the school-children both to the open-air and indoor swimming baths.

Barnstaple.

Dr. J. R. Harper reports a mild outbreak of epidemic jaundice among the children attending Tawstock school. Influenza became prevalent at the end of the year and spread widely over the rural district during the first quarter of 1924. One of the needs mentioned is the provision of public conveniences for day trippers near the sands of Instow, Braunton, Combe Martin, and Woolacombe.

Adwick-le-Street and Bentley-with-Arksey.

Dr. A. B. Dunne reports outbreaks of small-pox in both these urban districts. In Adwick the first case was notified on Feb. 13th, and 30 cases were notified up to Dec. 31st. There was a gap from May 7th to Sept. 22nd, after which Dr. Dunne thinks infection was reintroduced from outside. Infant vaccination had largely fallen into desuetude in the Doncaster Poor-law area, but was stimulated by the outbreak. There were 717 primary successful vaccinations in 1923 as compared with 111 in 1922. In the Bentley district 77 cases were notified. In each district all the cases were removed to hospital, and there were no deaths. In Adwick, 20 of the 30 cases occurred in unvaccinated persons; in Bentley, 62 of the 77 were unvaccinated. In each report Dr. Dunne points out the vital importance to the health and well-being of the community of a pure atmosphere and laments that nothing is being done to prevent the beauty of the countryside being ruined by the blight from the chimney stacks, and that what is bad for vegetation is also bad for human beings. In both these districts the population is growing rapidly, and Dr. Dunne considers the Registrar-General's population is an underestimate. In Adwick 401 houses were erected during the year, and in Bentley 120, of which latter number 46 were part of a municipal scheme.

Thedwastre and East Stow.

Dr. S. C. Hounsfield reports that the 18-bed isolation hospital which serves these two rural districts and Stowmarket urban district is quite out of date, that negotiations with the Ministry for the building of new wards have been completed, and that the work is to be put in hand at once. One of the most urgent needs of East Stow is the cleaning out of the river Gipping, the silted-up bed of which blocks the natural drainage of the district and creates serious flooding and sanitary difficulties. The proposal of the county council to provide work for the unemployed in cleaning out the river has unfortunately fallen through. Dr. Hounsfield says the housing problem is a pressing one in both districts. Overcrowding cannot be abated and unfit houses cannot be closed.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 24TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely: small-pox, 101; scarlet fever, 1493; diphtheria, 759; enteric fever, 116; pneumonia, 869; puerperal fever, 40; cerebro-spinal fever, 7; acute poliomyelitis, 7; encephalitis lethargica, 261; dysentery, 8; ophthalmia neonatorum, 167. There were no cases of cholera, plague, or typhus fever notified during the week. Of the cases of small-pox, 4 were notified from Cumberland (Workington 2, Cockermouth R.D. 2), a new locality; from the county of Derby 42 (23 of these from Chesterfield), from Northumberland 19 (all from Ashington), from Yorks, N. Riding 16 (all from Middlesbrough).

Deaths.—In the aggregate of great towns the deaths from influenza fell further from 73 to 67. There were in London 9 deaths from diphtheria, 17 only from measles. One death from small-pox was registered in Middlesbrough.

Obituary.

FORBES FRASER, C.B.E., F.R.C.S. ENG.

THE death of Mr. Forbes Fraser at Bath on May 28th, as the late result of an operating wound, removes a surgeon in the prime of life with a record distinguished alike at home and on the field of battle.

Forbes Fraser was born in 1871, the younger son of Mr. Henry Fraser, of Arbroath. At the age of 16 he entered St. Bartholomew's Hospital with an entrance scholarship, and his hospital career was a chapter of successes. He won the Harvey prize, the Brackenbury surgical scholarship, and the gold medal in physiology at the Intermediate London M.B., taking the Conjoint Diploma in 1894 and the F.R.C.S. Eng. in 1896, when he passed the examination a year before reaching the age when the diploma could be conferred. On leaving the hospital, where he became Mr. Butlin's house surgeon, Fraser engaged for three years in practice at Tarporley in Cheshire, where by dint of rising early and working late he found time to hunt and win prizes in point-to-point races. In 1900 he settled in Bath as the partner of Mr. Pagan Lowe. His long connexion with the Royal United Hospital began in 1903, when he was appointed assistant surgeon; at the time of his death he was senior surgeon. He was also consulting surgeon to the Ministry of Pensions Hospital, Bath, and to the hospitals at Chippenham, Frome, Malmesbury, and Shepton Mallet.

FORBES FRASER.

During the war Fraser joined the Duchess of Westminster's Hospital as surgeon and spent many active months at Le Touquet; it was then that beneath his guise of mildness there became revealed an inflexible doggedness in the pursuit of such things as he felt to be important. His colleagues there found him a fine and original surgeon, who might have becone a dominating figure in this field had he earlier become consulting surgeon to an army. In 1917 he took up special work at No. 10 Casualty

Clearing Station, Remy Siding, the results of which were published in the *British Journal of Surgery* under the title Primary and Delayed Primary Suture of Gunshot Wounds Subsequently most of his work was at one or other C.C.S. The advent of his surgical team was always welcome where active fighting was in progress. It is related of Fraser that the strain of battle-surgery never ruffled him, and in a tired, overworked operating theatre he radiated energy, good temper, and contentment. These qualities, combined with a sound knowledge of surgery and rare judgment, led to his appointment as consulting surgeon to the Second Army, and when after the armistice this army entered Germany he became consulting surgeon to the Army of the Rhine. He retired from the Army with the rank of Colonel A.M.S. and the C.B.E.

Fraser's return to Bath found him fresh outlets for his energy. The necessity of coördinating the medical services of the civil community was borne in upon him; and being singularly receptive he aimed at linking up well-equipped cottage hospitals and hospitals in smaller towns with the Royal United Hospital, Bath. Lack of funds, unfortunately, made it impossible to embark on the complete scheme. A beginning, however, was made, and we recorded only a week or two ago the opening of the Royal United Private Hospital and of the Orthopædic Hospital at Combe Park. The first patient was admitted to the latter on the day of Fraser's death; perhaps, said one of his friends, he would have wished no more fitting commemoration.

In his own circle Fraser worked unremittingly for harmony and good fellowship. He was an active member and founder of various surgical clubs, among them the Country Surgeons Club, the Bath and Bristol Surgical Club; he had been president of the Bath Clinical Society, and was a member of the committee of the Bristol Medico-Chirurgical Society. For the last two years he had arranged courses of post-graduate instruction at the Royal United Hospital, which were well attended. His Bath colleagues recently proved their high appreciation of his worth in recommending him as president-elect for the annual meeting of the British Medical Association to be held in 1925 at Bath.

In appearance Forbes Fraser was a Nordic, tall and spare, with clear blue eyes and ruddy complexion. His manner was unassuming, so that his modesty sometimes passed for diffidence, but behind this lay great self-reliance and unswerving determination to get the best out of himself and everyone round him. The high reputation of Bath as a city of healing owes not a little to his powers of organisation and straightforward dealing. His favourite recreation was salmon-fishing, and much of his spare time was spent fishing the trout streams of Wiltshire. He was also a keen motorist. He was a man whose friendship was highly prized.

His fellow practitioners at Bath write: "He was a staunch colleague and a loyal, kindly, and generous friend. Of a highly sensitive and somewhat emotional nature, he always kept himself firmly in hand and rarely allowed his feelings to overcome his habitual suavity of manner and speech. Conspicuously honourable and straightforward in all he did, he had the most bitter contempt, which he never hesitated to express, for anything suggestive of cant, humbug, or meanness of purpose. His enthusiasm, energy, and strong sense of public duty were an inspiration to all, and the affectionate regard in which he was held by all classes of the community is no more than a fitting tribute to one whose whole life was characterised by integrity of purpose, brilliancy of achievement, and unfailing kindness in all he did."

Forbes Fraser was twice married. By the first marriage he leaves two sons and three daughters, his eldest son being a medical student at St. Bartholomew's Hospital. By the second marriage there is one daughter. His second wife survives him, and to her and all his family we extend our sympathy.

DR. BRUNO BANDELIER.

NEWS has only just reached us of the death at Schömberg, near Wildbad, of Dr. Bandelier, who was latterly medical director of the Schwarzwaldheim Sanatorium after having held the position of senior physician of Dr. Weickers's institute at Görbersdorf and director of the sanatorium at Cottbus. He was one of the principal advocates in Germany of tuberculin treatment in rapidly repeated and increasing doses, with the aim of reaching a high degree of tuberculin tolerance, and in conjunction with Dr. O. Roepke, of Stadtwald, near Cassel, brought out, many years ago, the "Handbuch der Diagnose und Therapie der Tuberkulose," which has gone through seven German editions and has been twice translated into English under the title "Tuberculin in Diagnosis and Treatment." Dr. Bandelier also collaborated with the same author in the "Klinik der Tuberkulose," which dealt with the application of treatment in all the various localisations of the tubercle bacillus. Bandelier's methods were logical and safe, and in his own practice he eliminated to a vanishing point the risks attendant on tuberculin administration. His industry was almost incredible in summarising and abstracting—which he did with conspicuous fairness—the colossal accumulation of literature on tuberculin. Few, if any, therapeutic means have ever been laid before the medical profession with the principles so carefully worked out and the pitfalls so carefully noted. Whatever place tuberculin may finally take in the practitioner's outfit, the faithful work of Bandelier will remain.

Medical News.

UNIVERSITY OF LONDON: *University College.*—A public lecture on Some Recent Experimental and Statistical Studies on the Alcohol Problem, will be delivered by Prof. Raymond Pearl, of the Dept. of Biometry and Vital Statistics, Johns Hopkins University, U.S.A., on June 24th, at 5.30 P.M. The lecture is open to the public without fee or ticket, and will be held in the theatre of the Department of Applied Statistics and Eugenics of University College, Gower-street, W.C.

At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Honours.—Kathleen D. Arnsby (*b*), London Sch. of Med. for Women; Edward Gallop (*a*, *e*), St. Bart.'s Hosp.; Dorothy Gibson (*a*, *d*, University Medal), London Hosp.; William O. C. Jarratt (*d*), St. Thomas's Hosp.; James Maxwell (*a*, *e*), St. Bart.'s Hosp.; Alfred T. Rogers (*d*), Guy's Hosp.; Wilfrid P. H. Sheldon (*a*), King's Coll. Hosp.; Hilda N. Stoessiger (*b*), London Sch. of Med. for Women; Thomas C. Summers (*d*), London Hosp.; and Harold F. Walker (*e*), Middlesex Hosp.

(*a*) Distinguished in Medicine. (*b*) Distinguished in Pathology. (*d*) Distinguished in Surgery. (*e*) Distinguished in Midwifery.

Pass.—Isaac Atkin, St. Bart.'s Hosp.; Rose Baranov, Univ. Coll. Hosp.; Lancelot G. Bourdillon, St. Thomas's Hosp.; Doris K. Brown, London Sch. of Med. for Women; James W. Brown, Middlesex Hosp.; Dorothy E. B. Buckmaster, London Hosp.; Harold Burt-White, St. Bart.'s Hosp.; Grace D. Chambers, St. Mary's Hosp.; Charles E. Cobb, St. Thomas's Hosp.; Doris B. Collier, Univ. Coll. Hosp.; Elizabeth M. Cowie and Hilda M. Cunnington, London Sch. of Med. for Women; John A. Currie, Guy's Hosp.; Donald Davidson, King's Coll. Hosp.; Mahmoud Abu Bakr Demerdash, Univ. Coll. Hosp.; Henry T. Edmunds, King's Coll. Hosp.; Barbara J. Edwards, University of Birmingham; Lucy M. Elsom, King's Coll. Hosp.; Wilfred M. Evans and Richard F. Fagan, Univ. Coll. Hosp.; Louis Forman, Guy's Hosp.; Charles A. H. Franklin and Leslie French, St. Thomas's Hosp.; George F. Gibberd, Guy's Hosp.; Laura P. Gibbon, London Hosp.; Rachel Halperin, Univ. Coll. Hosp.; James R. Hamerton, St. Bart.'s Hosp.; Greta Hartley, London Sch. of Med. for Women; Linley I. Henzell, Univ. Coll. Hosp.; Aglionby D. Hepburn, Westminster Hosp.; Gwynedd Hugh-Jones, and Kathleen M. Hyslop, London Sch. of Med. for Women; John T. Ingram, London Hosp.; Reginald Keene, St. Bart.'s Hosp.; Lorna S. King, St. Mary's Hosp.; Robert A. E. Klaber, St. Bart.'s Hosp.; Ardeshir Jahangirshah Kohiyar, Univ. Coll. Hosp. and Grant Medical College; Gladys M. Lambourne, St. Mary's Hosp.; Ronald E. Lane, and Jehiel J. Lewinstein, Guy's Hosp.; Francis Louis, Univ. Coll. Hosp.; Eveleen Lyles, London Sch. of

Med. for Women ; Lucy M. T. Masterman, London Sch. of Med. for Women and St. Mary's Hosp. ; George O. Mitchell, Guy's Hosp. ; Clifford I. N. Morgan, St. Bart.'s Hosp. ; Richard M. Morris, London Hosp. ; Una F. M. Morton, Univ. Coll. Hosp. ; Louis Mushin, London Hosp. ; Grace H. Newell, Frances L. Nichol, and Lucy Parker, London Sch. of Med. for Women ; Alan C. T. Perkins, King's Coll. Hosp. ; Ethel A. Perrott, London Sch. of Med. for Women ; John W. G. Phillips, London Hosp. ; Jeffrey W. Poole, St. Bart.'s Hosp. ; Kenneth N. Purkis, Guy's Hosp. ; Margaret E. Reynolds, London Sch. of Med. for Women ; Stanley H. Robinson, Guy's Hosp. ; May K. Ruddy, Charing Cross Hosp. ; Frank P. Schofield, St. Bart.'s Hosp. ; Harold B. Shaw, Middlesex Hosp. ; Patricia H. S. Shaw, St. Mary's Hosp. ; Abraham I. Silverman, Middlesex Hosp. ; Harvie K. Snell, King's Coll. Hosp. ; Doris M. Stone and Margaret Swete, London Sch. of Med. for Women ; Arthur W. Taylor, St. Bart.'s Hosp. ; William Thomas, London Hosp. ; John H. Thompson, Univ. Coll. Hosp. ; Percy Thwaites, St. Bart.'s Hosp. ; Maurice A. Townshend and Eileen M. Turner, Univ. Coll. Hosp. ; Hermione M. Usborne and Dorothy M. Vaux, London Sch. of Med. for Women ; James A. Walker, St. Mary's Hosp. ; Robert G. R. West, St. Bart.'s Hosp. ; Joan F. Whitelock, Univ. Coll. Hosp. ; Emrys Williams, St. Thomas's Hosp. ; John G. Wilson, Westminster Hosp. ; and Esther Wingate and Isabelle J. Woodhouse, London Sch. of Med. for Women.

Society of Apothecaries of London.—At examinations held recently the following candidates passed in the subjects indicated :—

Surgery.—H. C. Clifford-Smith, Charing Cross Hosp. ; J. H. Cooper, Glasgow ; W. R. A. Line, Birmingham ; R. Schofield, Guy's Hosp. ; and L. Statnigrosch, Middlesex Hosp.

Medicine.—E. J. Creais, St. Mary's Hosp. ; W. R. A. Line, Birmingham ; E. J. P. McDowell, St. Thomas's Hosp. ; J. P. McGuire, St. Mary's Hosp. ; and W. T. Swanton, Cork and Charing Cross Hosp.

Forensic Medicine.—F. H. Armanious, St. Thomas's Hosp. ; R. Hare, St. Mary's Hosp. ; W. R. A. Line, Birmingham ; and E. J. P. McDowell, St. Thomas's Hosp.

Midwifery.—K. R. Chaudhri, St. Mary's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery : F. H. Armanious, J. H. Cooper, E. J. Creais, and L. Statnigrosch.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow.—The following candidates, having passed the requisite examinations, have been admitted Diplomates in Public Health :—

Marion B. Armstrong, Dugald Baird, George Brewster, George Buchanan, Alexander A. Charteris, Alisdair C. Dewar, David R. Hamilton, Agnes M. Hill, Kenneth D. Mackintosh, Evelyn M'Pherson, Gilbert Paterson, Bessie S. Ross, Eva M. Sturrock, Joseph G. Tait, Sarah B. H. Walker, Marion Watson, Robert H. Williamson, and Jessie M. L. Wright.

London School of Hygiene and Tropical Medicine.—The court of governors, established under the Royal Charter incorporating the London School of Hygiene and Tropical Medicine, has now been constituted as follows : Sir Harry Goschen, Sir George Newman, and Sir W. Arthur Robinson, appointed by the Minister of Health ; Prof. H. R. Kenwood, Sir William J. R. Simpson, and Mr. H. J. Waring, by the Senate of the University of London ; Sir Arthur Clarke and Sir Ion Hamilton Benn, by the Seamen's Hospital Society ; Sir Gilbert Barling, Sir E. Coey Bigger, Dr. W. L. H. Duckworth, Prof. J. B. Leathes, Dr. John C. McVail, and Sir Humphry Rolleston, by the General Medical Council ; Sir Malcolm Delevingne, by the Home Secretary ; Sir Herbert Read, by the Colonial Secretary ; Colonel H. P. W. Barrow, by the Secretary of State for War ; Major-General Sir Richard Havelock Charles, by the Secretary of State for India ; Air Commodore D. Munro, by the Secretary of State for Air ; Surgeon Vice-Admiral Joseph Chambers, by the Board of Admiralty ; Mr. W. R. Buchanan Riddell, by the President of the Board of Education ; Sir A. Daniel Hall, F.R.S., by the Minister of Agriculture and Fisheries ; Sir W. Leslie Mackenzie, by the Secretary for Scotland ; Sir Frederick Andrews, F.R.S., by the Medical Research Council ; Sir Walter Fletcher, F.R.S., by the Royal Society ; Sir George S. Buchanan, by the Health Committee of the League of Nations ; Mr. W. Ray, by the London County Council ; Mr. Walter Eickhoff, by the Metropolitan Asylums Board ; Sir William Hodgson, by the County Councils Association ; Alderman Francis Askew, by the Municipal Corporations Association ; Sir David Bruce, F.R.S., by the Lister Institute ; Sir Henry Tanner, by the Royal Sanitary Institute ; Sir William R. Smith, by the Royal Institute of Public Health ; and Dr. R. A. Bolam, by the British Medical Association. The first meeting of the court was held at the Ministry of Health on May 29th, when 32 members were present. Mr. H. J. Waring was elected chairman of the court. The board of management has now been completed and is constituted as follows : Sir Alfred Mond, Sir George Newman, Sir Walter Fletcher, F.R.S., Sir E. Cooper Perry, Mr. H. J. Waring, Sir Arthur Clarke, Sir Humphry Rolleston, Colonel H. P. Barrow, and Dr. John Robertson.

Royal Society of Medicine.—A conversazione will be held in the Society's house, 1, Wimpole-street, W.1, on June 24th, at 9 P.M., when the President, Sir William Hale-White, will give a short address on the Story of "Say Ninety-Nine."

London (R.F.H.) School of Medicine for Women.—A post-graduate course of instruction for medical women in treatment of venereal diseases has been arranged jointly by this school, the Royal Free Hospital, the London Lock Hospital, and the Elizabeth Garrett Anderson Hospital. The course will begin on June 16th at 10 A.M., and will continue for two weeks. The number of persons admitted to the course will be limited to 12, and applications will be dealt with in the order received. The course is designed to be strictly practical in character, and a certificate will be issued to practitioners attending the full course to the satisfaction of their teachers. Those taking part include Mr. Johnston Abraham, Dr. Margaret Rorke, Lady Barrett, Colonel L. W. Harrison, Mr. Charles Gibbs, Dr. Ruth Balmer, Mr. J. E. R. McDonagh, Mr. Laurence Abel, Major W. Victor Corbett, and Mr. Lindsay Rea. Application should be made to the Warden and Secretary at the School, 8, Hunter-street, W.C.

Conference of the International Union against Tuberculosis.—The fourth conference will be held at Lausanne, Switzerland, on August 5th, 6th, and 7th, and a provisional programme has now been issued. The subject for the first discussion, to be held at 2 P.M. on August 5th, will be opened by Prof. A. Calmette, and will deal with the following problem : Do there exist in nature or can there be artificially produced saprophytic varieties of Koch's bacillus which possess the property of becoming virulent tubercle bacilli ? At 5 P.M. Prof. H. Sahli will lecture on the Defence of the Organism against the Tubercle Bacillus. On August 6th, at 10.30 A.M., a discussion on the Relationship Between Pregnancy and Tuberculosis will be opened by Prof. J. H. Forssner ; and at 5 P.M. Prof. Léon Bernard will lecture on Prophylaxis in Childhood against Tuberculosis. On August 7th, at 9.30 A.M., a discussion on the Effects of the Anti-Tuberculosis Campaign on the Diminution of the Mortality from Tuberculosis in Different Countries will be opened by Sir Robert Philip. A visit to the principal anti-tuberculosis centres in Switzerland will be arranged, to start on August 8th. The itinerary will include : Leysin, Montana, Heiligenschwendi, Berne, Zurich, Davos, and Arosa. The tour will take about eight days. Application for admission as an ordinary member of the union (annual subscription £1) should be made not later than June 16th to Miss Freda Stickland, secretary, National Association for the Prevention of Tuberculosis, 20, Hanover-square, London, W. 1, from whom further particulars can be obtained.

Livingstone College.—Commemoration day at Livingstone College was held on May 31st, when a large number were present. The chair was taken by Sir William J. R. Simpson. The Principal of the College said that 36 students had entered the College during the present session. He spoke of the encouraging reports received from former students of the value of the training received at the College, and emphasised the need for an increase of students and subscriptions to carry on the work more usefully in the future. A cheque, amounting to £52 17*s.* 9*d.*, was handed to the treasurer, Mr. R. L. Barclay, by the senior student, on behalf of the past and present students, to help meet the cash deficit, as a token of gratitude, esteem, and good will. The treasurer said that the financial side of the work of Livingstone College for the last few years had been one of considerable anxiety. He referred to the fact that the College had to depend on the fees of students and the subscriptions of a few friends for its upkeep. It was necessary to increase the number of students, and until that is an accomplished fact further subscriptions are called for. About £500 are needed to balance the cash account before Sept. 30th. The chairman said that the course at Livingstone College is an excellent one, and one that will be most useful to the missionary in order to teach him how to care for his own health, and to get into the hearts of the people amongst whom he works. The students of this College were taught the methods of prevention of malaria, dysentery, and cholera, and in this way are most helpful to the sanitary authorities.

Messrs. William Heinemann (Medical Books), Ltd., announce the forthcoming appearance of a book on Encephalitis Lethargica by Prof. Aug. Wimmer, containing a preface by Sir Frederick Mott.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The annual dinner of this society will take place at the Trocadero Restaurant, Piccadilly, London, W., on June 13th. Sir W. H. Willcox, the President, will take the chair.

The Cavendish Lecture will this year be delivered by Sir Robert Jones on Some Points in Manipulative Surgery, at the Kensington Town Hall, London, W., at 8.15 P.M., on June 20th. A conversazione will follow, at which many firms will provide medical and surgical exhibits.

GLASGOW UNIVERSITY CLUB, LONDON.—The annual summer dinner will be held at the Trocadero Restaurant, Piccadilly, on Friday, June 27th, at 7.30 P.M., Lieut.-Colonel John Buchan in the chair. Any Glasgow University men, not members of the Club, who desire to attend the dinner are requested to communicate with the hon. secretaries, 1, Harley-place, N.W. 1.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The prize founded by Dr. J. T. Neech for the best paper read in each session before a branch or group of the Society of Medical Officers of Health has been awarded to Dr. C. O. Stallybrass for his paper entitled Encephalitis Lethargica; Some Observations on the Recent Outbreak, read before the North-Western branch in May, 1922. The assessors for the prize were the President (Dr. T. W. Naylor Barlow), Prof. H. R. Kenwood, Dr. W. J. Howarth, and Dr. R. A. Lyster.

WESTMINSTER CIVIC DINNER.—On Monday, June 2nd the Public Libraries, Public Baths and Watch Committees of the City of Westminster were entertained at a dinner held in the Savoy Hotel, at which the Mayor of Westminster, Councillor Edgar Horne, J.P., occupied the chair. The toast of "The Libraries, the Baths, and Watch Committees" was proposed by the chairman, who referred to the excellent and enterprising work which had been carried out by these three sections. The toast was responded to by Councillors the Rev. Jocelyn Perkins, Major W. C. Hussey, and George H. Heilbuth, respectively, for each committee. "The Visitors" were toasted by Alderman Sir Robert Walden, and there replied Mr. H. A. L. Fisher and Mr. A. R. Dyer, chief officer of the London Fire Brigade. Sir Edward Thesiger gave the "City of Westminster" and the Mayor replied. A pleasant musical programme was contributed by the Westminster Singers. Among others present were: Brigadier-General R. H. More, Sir Robert Sanders, Colonel Arthur Brodrick, Sir John Horsburgh-Porter, Mr. F. L. D. Elliot (Assistant Commissioner of Police), Mr. C. K. Francis, The Very Rev. Father Russell, Sir Henry New, Mr. Sidney C. Harper (the Mayor of Islington), and Lieut.-Colonel H. M. Pryce-Jones.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Commencing on Monday, June 16th, the Royal Northern Hospital will give, in conjunction with the Royal Chest Hospital, a two weeks' intensive course, including all the general and special departments of medicine and surgery. The Wednesday sessions will be undertaken by the Royal Chest Hospital, but apart from these the work will be carried out at the Royal Northern Hospital, and includes demonstrations of clinical methods and cases in the mornings and afternoons, followed by a formal lecture, open to members of the profession, at 4.30 P.M. At St. Peter's Hospital there will be a four weeks' special course in urology from June 16th to July 12th, which will consist of clinical work daily, in addition to formal lectures on the various aspects of urinary diseases. Beginning also on June 16th the Children's Clinic (Western General Dispensary) has arranged a series of nine lecture-demonstrations on children's diseases. The last demonstration and lecture will take place on Friday, July 4th, and will be given by Dr. Bernard Myers at the Royal Waterloo Hospital. Courses already in progress are Gynæcology at the Chelsea Hospital for Women, Diseases of Tropical Countries at the London School of Tropical Medicine, both of which will conclude on the 27th of the month. The following courses have been arranged for July and August: Cardiology, at the National Hospital for Diseases of the Heart; General Intensive Course, at the North-East London Post-Graduate College (Prince of Wales's General Hospital); Diseases of the Chest, at the Brompton Hospital; and Neurology, at the West-End Hospital for Nervous Diseases. Copies of the syllabus and full particulars of any of the above courses can be obtained from the secretary to the Fellowship of Medicine, at 1, Wimpole-street, London, W. 1.

Parliamentary Intelligence.

HOUSE OF LORDS.

WEDNESDAY, MAY 28TH.

Therapeutic Substances Bill.

THE Therapeutic Substances Bill was read a third time.

THURSDAY, MAY 29TH.

Cost of Medical Benefit.

The National Health Insurance (Cost of Medical Benefit) Bill received the Royal Assent by Commission.

HOUSE OF COMMONS.

TUESDAY, MAY 27TH.

International Restrictions on Use of Lead Paint.

Mr. D. G. SOMERVILLE asked the Home Secretary the numbers and names of those Powers signatory to the International Labour Organisation Convention of Nov. 19th, 1921, who had either ratified the proposed restrictions on the use of lead paint or had laid legislation to that end before their respective legislatures; and whether he would give the names and numbers of those Powers concerned who had taken no such action.—Mr. HENDERSON replied: I have consulted with my right hon. friend, the Minister of Labour, on this matter. Our information is that three Powers—namely, Czecho-Slovakia, Esthonia, and Sweden—have formally ratified the Convention, though I understand that in the case of Czecho-Slovakia legislation to give effect to the provisions of the Convention has not yet been passed. Ratification has been authorised, though not formally registered, in the case of four other Powers—Austria, Greece, Italy, and Poland. In the case of seven countries—Bulgaria, Chili, Cuba, Germany, Latvia, Netherlands, and Spain—legislative proposals to give effect to the draft Convention have been laid before the respective legislatures. Draft Conventions adopted by the International Labour Conference are not signed. Of the 54 members of the International Labour Organisation at the time of the third session of the Conference in 1921, 39 were represented at the Conference; in the case of Albania, Bolivia, Canada, China, Finland, Guatemala, India, Japan, Roumania, Siam, and Venezuela the Government representatives did not vote for the draft Convention. So far as I am aware, the remaining countries represented at the Conference—namely, South Africa, Australia, Belgium, Brazil, Columbia, Denmark, France, Luxembourg, Norway, Portugal, Kingdom of the Serbs, Croats and Slovenes, Switzerland, and Uruguay—have, as yet, not brought before their respective legislatures legislation designed to give effect to the draft Convention. I would add that in France the use of white lead in painting operations carried out by operative painters, whether on the exterior or interior of buildings, is prohibited by a decree dated July 20th, 1909.

Encephalitis Lethargica.

Sir PHILIP DAWSON asked the Minister of Health the number of cases of encephalitis lethargica reported during the 12 months ended May 30th, 1924; the number reported during the corresponding period of the preceding year; and the total number of deaths in the periods mentioned.—Mr. WHEATLEY replied: The figures for the actual periods mentioned in the question are not available, but the following table gives the particulars required for each quarter in 1922 and 1923, and for the first 20 weeks of the present year:—

Notifications.		*Deaths.*	
13 weeks ended—	England and Wales.	Quarter ended—	England and Wales.
Apl. 1st, 1922	140	Mar. 31st, 1922	95
July 1st, ,,	132	June 30th, ,,	96
Sept. 30th, ,,	89	Sept. 30th, ,,	82
Dec. 30th, ,,	93	Dec. 31st, ,,	66
Mar. 31st, 1923	448	Mar. 31st, 1923	188
June 30th, ,,	279	June 30th, ,,	167
Sept. 29th, ,,	144	Sept. 30th, ,,	90
Dec. 29th, ,,	154	Dec. 31st, ,,	86
Mar. 29th, 1924	753	Mar. 31st, 1924	229‡
May 17th,* ,,	1715†	May 17th,* ,,	?

* Seven weeks ended. † Uncorrected. ‡ Approximate.

The notifications in England and Wales during the 52 weeks ended June 2nd, 1923, were 868, and during the 50 weeks ended May 17th, 1924, were 2829. (Uncorrected figures for last seven weeks as above.)

WEDNESDAY, MAY 28TH.

Maternity Convention.

Mr. WHITELEY asked the Minister of Labour whether it was the intention of the Government to bring the Maternity Convention decisions before the House for ratification during the present session; and, if not, whether he could give any assurance that they would be dealt with during the autumn session.—Mr. T. **SHAW** replied: I am still in consultation with my right hon. friend, the Minister of Health, regarding the policy to be adopted by His Majesty's Government in connexion with this draft Convention. I cannot at present make any further statement.

Royal Commission on Lunacy Laws.

Major **MOULTON** asked the Minister of Health whether he was now prepared to form the proposed committee to inquire into the lunacy laws: and whether, pending its report, he would take steps to provide for more frequent inquiries into the mental state of patients detained in asylums by persons extraneous to such asylums.—Mr. **WHEATLEY** replied: I hope that a Royal Commission will be appointed within the next few weeks. Pending their report, I will continue to keep a careful watch on the administration of the Lunacy Acts.

Public Health Services Inquiry.

Mr. **MONTAGUE** asked the Minister of Health whether he was prepared to appoint a court of inquiry to investigate and report upon the prevailing conditions of the public health service of the country.—Mr. **WHEATLEY** replied: I do not, as at present advised, see any necessity for such a general inquiry as is suggested, since there is clearly room for further expansion and improvement of the services on what is already known about them.

Compulsory Segregation of Tuberculosis Cases.

Mr. **BLACK** asked the Minister of Health whether he would state the policy of the Government with respect to the compulsory segregation of persons seriously affected with tuberculosis and in an infectious and incurable condition; and whether he could promise adequate protection to the children and near relatives of such persons who were, through lack of housing accommodation, forced to live in close proximity to such diseased persons.—Mr. **WHEATLEY** replied: As regards the first part of the question, this matter will be considered in connexion with any proposals for the amendment of the Public Health Acts. As regards the second part, it is for the local sanitary authorities to take all such steps as are practicable to prevent the spread of infection.

Cost of a Poor-law Institute.

Mr. **LINFIELD** asked the Minister of Health the average cost, including food, clothing, medicine, attendance, doctors' fees, and all overhead charges, of a Poor-law institute.—Mr. **WHEATLEY** replied: In the financial year 1922–23 the average weekly cost per inmate of all the Poor-law institutions in England and Wales was about 26*s.* 6*d.* This amount includes food, clothing, medicine, fuel, and lighting; salaries and other remuneration of doctors, masters, matrons, nurses, attendants, and other persons; the cost of the upkeep of buildings and furniture; rent, rates, taxes and insurance, interest on loans for capital works and provision for repayment of such loans.

Smoke Abatement.

Mr. **LORIMER** asked the Minister of Health if he was aware that public opinion was ready and eager to strengthen the Public Health Act of 1875 regarding smoke abatement; that many of the largest towns in the country had given up attempts to prevent atmospheric pollution under the Public Health Act, and had applied to Parliament for special powers; and was he ready to grant the special powers asked for.—Mr. **WHEATLEY** replied: The Government hope to introduce a Bill dealing with this subject at an early date.

National Health Insurance.

Mr. **WILLIAM M. ADAMSON** asked the Minister of Health whether the National Health Insurance (Prolongation of Insurance) Act was to be renewed for the year 1925.—Mr. **WHEATLEY** replied: The question of the extension until Dec. 31st, 1925, of the National Health Insurance (Prolongation of Insurance) Act is receiving consideration; but I am not yet in a position to make a definite announcement on the subject.

THURSDAY, MAY 29TH.

Revision of Pension Awards.

In reply to Mr. **LANSBURY**, Mr. F. O. **ROBERTS**, Minister of Pensions, said: I am aware that among the cases of disabled ex-Service men and dependents of men who lost their lives in the late war, there are some which on merits call for reconsideration. I am glad to be able to inform my hon. friend that, by an extension of arrangements initiated by my predecessors, I have now been enabled to secure that all cases in which additional evidence is furnished shall be fully considered and a suitable grant made, with the assistance of the Treasury, if the disability or death is now found, in the light of all the evidence available, to be due to service in the late war. The necessary arrangements are being made to enable such cases, if they are referred to local or regional offices, to be dealt with.

Meals for Necessitous School-children.

Mr. **NIXON** asked the President of the Board of Education how many necessitous children received meals in elementary schools; how many meals were served in 1923; and what was the cost per meal.—Mr. C. **TREVELYAN** replied: The latest period for which I have complete figures is the year ending March 31st, 1923. During that year 149,676 children received school meals under the provisions of the Education Act, 1921; of these, 127,636 received free meals. The total number of meals provided was 17,171,298, of which 14,991,798 were provided free. The average total cost per meal was 3·6*d*. During the calendar year 1923, 11,463,487 meals were provided, of which 9,357,557 were provided free.

MONDAY, JUNE 2ND.

Army Hospitals in India.

Mr. **BROAD** asked the Under Secretary of State for India: (1) How far effect had been given to the recommendations of Lord Inchcape's Committee on Retrenchment to reduce the number of Army hospitals and the number of beds in those which were retained; and whether any and, if so, what reduction had been made in the hospital staffs as recommended by that committee; and (2) whether, seeing that the Inchcape Retrenchment Committee reported that British hospitals in India were not used to a quarter of their capacity and Indian hospitals only to a third of their capacity, and that they made recommendations for the reduction of the number of hospitals, beds, and staffs, whether any action was taken on these recommendations; and what was the financial saving in consequence.—Mr. **RICHARDS** replied: The following action has been taken on proposals of the Indian Retrenchment Committee regarding medical services and hospitals. The number of beds in the British and Indian station hospitals has been reduced by the amounts shown below:—

	British station hospitals.	Indian station hospitals.
Northern command	1016	1180
Southern ,,	466	582
Eastern ,,	331	184
Western ,,	83	95
Burma district	61	—

A reduction of 15 officers of the Indian Medical Service has been carried out and the services of 60 assistant surgeons are being dispensed with. A saving of Rs.5 lakhs was anticipated from these reductions, but the actual net saving is not yet known.

Civil Surgeons in United Provinces.

Mr. **HOPE SIMPSON** asked the Under Secretary of State for India how many civil surgeons are employed in the United Provinces, and of these how many were commissioned European officers.—Mr. **RICHARDS** replied: There are 50 civil surgeons in the United Provinces. On Jan. 1st last these included 15 European officers of the Indian Medical Service and 10 officers of the Indian Medical Department.

Royal Commission on Lunacy Laws.

Mr. **COSTELLO** asked the Prime Minister whether, in view of the fact that the provisions of the Scotch Lunacy Acts differed in many particulars from those of the English Lunacy Acts, it was intended to include in the terms of reference to the Royal Commission on Lunacy about to be appointed the question of Scotch administration in addition to English administration of these Acts; and, since the administration of a Government department might be called in question in the course of the inquiry, would he consider the question whether it was undesirable to appoint to the Commission any person holding office under the Government.—Mr. **MACDONALD** replied: It is not intended to include in the terms of reference of the proposed Royal Commission the question of lunacy law and administration in Scotland. With regard to the second part of the question, I do not think it undesirable to appoint a member of the Government to be a member of the Commission if his personal qualifications are such that the appointment would strengthen the Commission.

TUESDAY, JUNE 3RD.

Vivisection of Dogs.

Lieut.-Commander **KENWORTHY** presented a Bill to prohibit the vivisection of dogs. The Bill was read a first time.

Cruelty to Children.

Dr. **SPERO** asked leave to introduce a Bill to amend the Children Act 1908 in respect of punishments for second or subsequent convictions by abolishing the option of a fine. The Bill, he said, would greatly reduce the number of cruelty cases in regard to children.

Mr. **FOOT** opposed the Bill on the ground that it was ill-conceived and would not achieve its purpose.

A division was challenged, but as only three members rose in support of this demand, the Speaker declared that leave to introduce the Bill was refused.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Friday, June 13th.

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)

Annual General Meeting:
Election of Officers and Council for 1924-25.

Cases will be shown.

Exhibit:
Mr. Frank Juler: A Modification of Elliott's Scotometer.

Paper:
Dr. George Riddoch and Mr. Charles Goulden: The Relationship between Subarachnoid and Intra-ocular Hæmorrhage.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, Leicester-square, W.

Wednesday, June 11th.—4.30 P.M., Prof. M. Oppenheim: Annual Oration. Affections of the Skin caused by Occupation and Profession.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, June 9th, to Saturday, June 14th.—Chelsea Hospital. Daily Operations, &c. Tues., 5 P.M., Mr. Victor Bonney: Carcinoma of the Cervix. Thurs., 9.30 A.M., Gonorrhœa in Women. Fri., 2 P.M., Mr. Comyns Berkeley: Ovarian Cysts. Sat., 11 A.M., Mr. Aubrey Goodwin: Path. Dem.—London School of Tropical Medicine. Tuesdays and Thursdays at 2 P.M., Demonstrations on Diseases of Tropical Countries. Maudsley Hospital. Wed., 2.30 P.M., Dr. Mapother: States of Mania and Depression.—St. John's Hospital for Diseases of the Skin. Clinical Demonstrations, Daily (except Saturdays) at 2 and 6 P.M. Thurs., 5 P.M., Dr. Haldin Davis: Acne.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Tuesday, June 10th.—10 A.M., Mr. Steadman: Dental Dept. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

Wednesday.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Pernet: Skin Dept. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

Thursday.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

Friday.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

Saturday.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

Post-Graduate Course.

Tuesday, June 10th.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Risien Russell. Lecture: The Localisation of Intracranial Tumours.

Thursday, June 12th.—12 noon, Dr. Riddoch. Lecture: Anatomy and Physiology of the Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Russell J. Reynolds. Lecture: Radiology in Nervous Diseases.

Friday, June 13th.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Mr. Sargent. Lecture: Tumours of the Ponto-Cerebellar Angle.

Applications should be addressed to the Secretary, Medical School, National Hospital for the Paralysed and Epileptic, Queen-square, London, W.C. 1.

J. G. Greenfield, Dean.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN.

Thursday, June 12th.—5 P.M., Dr. M. G. Hannay: Lichenification.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street. W.C.

Thursday, June 12th.—4 P.M., Dr. Frew: Infant Feeding.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL,

Thursday, June 12th.—5 P.M., Mr. Richard Lake: Middle-Ear Disease. (Geoffrey E. Duveen Lectures in Otology.)

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

Monday, June 9th.—(At the Children's Hospital.) Dr. Fordyce: Medical Cases.

Tuesday.—(At the Southern Hospital.) Mr. Armour: Injuries of the Forearm, Wrist, and Hand.

Wednesday.—(At the Northern Hospital.) Dr. Pemberton: Jaundice.

Thursday.—(At the Stanley Hospital.) Dr. Wadsworth: Acidosis.

Friday.—(At the Royal Infirmary.) Dr. John Hay: Electrocardiograph Demonstration.

Appointments.

Critchley, Elizabeth E., M.B., Ch.B. Edin., has been appointed Resident Medical Officer, Fulwood Institution, Preston.

Litt, John Percy, M.D. Edin., Medical Officer of Health and School Medical Officer for the Borough of Lytham, St. Annes.

Lodge, W. Oliver, M.D. Leeds, F.R.C.S. Edin., Consulting Ophthalmologist to the Bradford Corporation.

Maguire, C. C. W., M.R.C.S., L.R.C.P. Lond., Medical Registrar, Queen's Hospital, Birmingham.

Rodgers, J. H., L.R.C.P., L.R.C.S. Edin., Medical Officer, Weymouth District Board of Guardians.

Willesden Urban District Council: Champneys, W. D., M.A., M.B., Ch.B., D.P.H., Assistant M.O.; and Gray, Alice J., M.A., M.B., Ch.B., D.P.H., Resident M.O.

Medical Referees under the Workmen's Compensation Act: Odell, R., M.D. Durh. (St. Albans, Barnet, Hertford, and Watford); May, Sir Gould, M.D. Camb. (West London); and MacFadden, C. J. R., M.D. Edin. (Marylebone). Cripps, F. R., M.B., Ch.B. Edin., Certifying Surgeon under the Factory and Workshop Acts (Patrington, York).

Vacancies.

For further information refer to the advertisement columns.

Alton, Hampshire, Lord Mayor Treloar Cripples' Hospital and College.—Jun. Asst. R.M.O. £250.

Ashton-under-Lyne District Infirmary.—H.S. £150.

Bahamas.—Bacteriologist and Asst. M.O.H. £600.

Barbados General Hospital.—Res. S. £330.

Barnsley, Beckett Hospital and Dispensary.—Jun. H.S. £160.

Bournemouth, Royal Victoria and West Hants Hospital.—Res. H.S. £150.

Breconshire, South Wales Sanatorium, near Talgarth.—Jun. Asst. R.M.O. £200.

Brighton, Hove Hospital, Sackville-road.—R.M.O. £175.

Bristol General Hospital.—Hon. Clin. Assts.

Bristol Royal Infirmary.—Hon. P. and Hon. Asst. P.

Canterbury, Kent and Canterbury Hospital.—Res. M.O. £175.

Cardiff, Welsh National School of Medicine.—Lecturer in Special Sense Physiology. £750.

City of London Maternity Hospital, City-road, E.C.—R.M.O. £100.

Derbyshire County Council.—Locum Tenens Tuberculosis Officer. £700.

Doncaster Royal Infirmary.—Jun. H.S. £150.

Dreadnought Hospital, Greenwich S.E.—H.S., and H.P. Each £150.

Dundee, King's Cross Infectious Diseases Hospital.—Sen. R.M.O. £350.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.P., H.S., Cas. M.O., and Cas. Surg. O. Each £100.

Harrogate Infirmary.—H.S. £150.

Hong-Kong Government.—Two M.O.'s. Also Asst. Port Health O. Each £600.

Huddersfield, Storthes Hall Asylum, Kirkburton.—Asst. M.O. £400.

Lambeth Parish Hospital.—Jun. Asst. M.O. £200.

Leeds University, Dept. of Pathology and Bacteriology.—Lecturer in Chemical Pathology. £600.

London Hospital, E.—First Asst. to each of the four Medical Firms. £400.

London Hospital Medical College.—University Chair of Medicine. £2000.

London Lock Hospital, 91, Dean-street, S.W.—Clin. Assts.

London Temperance Hospital, Hampstead-road, N.W.—R.M.O. £200.

Manchester Royal Eye Hospital.—Hon. Surg., Hon. Aural Surg., and Hon. Dental Surg.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. Path. £250. Also R.M.O. £200.

Newcastle-upon-Tyne, Princess Mary Maternity Hospital, Jubilee-road, City-road.—Asst. R.M.O. £40.

Nottingham General Hospital.—H.P., H.S., also H.S. for Ear, Nose, and Throat Dept. Each £150.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. P., H.P., 2 H.S.'s, Obstet. H.S., also H.P. and Cas. O.

Royal Army Medical Corps.—20 Commissions.

Royal Northern Hospital, Holloway, N.—Anæsthetist. 10 guineas.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Non-Res. Cas. O. £150. Also Hon. P. to Outpatients.

Salford Royal Hospital.—Res. M.O. £175.

Sheffield Royal Infirmary.—Ophth. H.S., H.S., Asst. Cas. O., and H.S. to Ear, Nose, and Throat Dept. Each £60.

Stroud General Hospital.—H.S. £150.

University of London.—External Examiners.

West Bromwich and District Hospital.—Res. H.S. £220.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., Res. Cas. O. Each £100.

The Chief Inspector of Factories, Home Office, London, S.W., announces a vacancy at Lyndhurst, Hampshire.

Births, Marriages, and Deaths.

BIRTHS.

JAMES.—On May 25th, at Quatre Bras, Wellington College, Berks, the wife of Dr. Alfred H. James of a daughter.

TANDY.—On May 27th, at Avenue Elmers, Surbiton, the wife of Dr. Oswald Tandy of a daughter.

WILLIAMS.—On May 29th, at 30, Cumberland-terrace, Regent's Park, to E. Christine Pillman Williams, M.B.E., M.B., B.S., and E. Ulysses Williams, O.B.E., M.R.C.S., of 128, Harley-street—a son.

MARRIAGES.

STEWART—MOORE.—On May 5th, at St. Paul's Church, Durban, James Lennox Stewart, M.B., B.S. Lond., to Florence Evelyn Moore, daughter of Mr. and Mrs. C. T. E. Moore, of Leslie, Transvaal.

DEATHS.

BLACK.—On May 25th, at St. Mary's Hospital, Patrick Black, M.R.C.S., L.R.C.P., of asphyxia due to acute bronchopneumonia of both lungs, aged 43.

FRASER.—Forbes Fraser, C.B.E., F.R.C.S., of 5, The Circus, Bath, on May 28th, after five months' illness (pyæmia), aged 53.

WILKINSON.—On June 1st, at Osborne-villas, Windsor, Clement John Wilkinson, surgeon, in his 64th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Comments, and Abstracts.

CINCHONA BARK: ITS ECONOMIC AND HYGIENIC RELATIONSHIPS.

IN the Chadwick lecture, delivered on June 4th at the Chelsea Physic Garden, Sir D. Prain discussed the Economic and Hygienic Relationships of Cinchona Bark and its Alkaloids. He said that European acquaintance with Peruvian bark had been traced to the cure in 1638 of a vicereine of Peru, who had contracted malaria, and whose name is perpetuated in that of the genus *Cinchona*. This bark became a forest product exploited in Loxa, now Southern Ecuador; it appeared first in a London pharmacopœia in 1677.

Exploitation of forest products may lead to narrowed supply, increased cost, and substitution. After 1753 the red bark of *C. succirubra*, from Chimborazo in Northern Ecuador, competed with the pale bark of *C. officinalis* from Loxa, which its exporters now termed crown bark. Europe thought red bark, although cheaper, as useful as crown; red became, and still remains, the only cinchona bark recognised as officinal. Trade substitution did not end here; the grey barks of *C. micrantha* and *C. nitida* from Huanuco in Central Peru competed with red, and their exploitation extended so as to include the yellow bark of *C. calisaya* from Bolivia. Scarcity of yellow bark led to the commercial exploitation of Colombian bark, obtained from *C. lancifolia*. As this was the last bark of importance to pharmacy that the rain forests of the Andes could supply, Europe undertook the cultivation of cinchona. Conversion of forest products into crops is subject to limiting factors. When labour is unprocurable, the crop must go where labour exists. France tried this crop in Algeria in 1849; Holland tried it in Java in 1851; England did so in Ceylon, the Nilgiris, and the Eastern Himalaya in 1861.

After labour comes environment. The soil and climate of Algeria did not suit cinchona; those of Java proved satisfactory. Ceylon and South India provided a suitable climate but a less satisfactory soil; in the Himalaya even the climate is marred owing to there being a distinct dry season.

Alkaloid Content of Barks.

After environment comes adaptability. Colombian bark is unwilling to thrive, even in Java. Red bark and grey prove accommodating, even in the Eastern Himalaya. Yellow bark can be planted in the Eastern Himalaya; it refuses to thrive in most parts of South India. There are limiting factors connected with utilisation as well as with production. Among the 40 cinchonas of the Andes, only six have proved of importance to pharmacy because of the alkaloid-content of their barks. Even in these important barks the alkaloid-content may vary naturally: 3 per cent. means a poor, 6 per cent. a good, 9 per cent. or over, a rich sample. Under cultivation, environment may induce further variation; barks "rich" in Java may be only "good" in South India or the Himalaya. This alkaloid-content factor has not inhibited the cultivation of any kind of cinchona; it has, however, rendered the careful selection of strains essential. The equally careful selection of kinds that, under existing conditions, is imperative, depends on the allied factor of alkaloid nature. The alkaloids of cinchona bark may be amorphous or crystallisable. All are remedial against malaria, the physiological action of the amorphous being more rapid than that of the crystallisable, and the efficacy of the crystallisable being accentuated when administered in an uncrystallised state. The chemical relationship of the amorphous to the crystallisable alkaloids is less clear than the inter-relationships of the crystallisable, whose remedial powers are believed to differ.

The crystallisable alkaloids in officinal cinchona bark were separated collectively for the first time in 1815. In 1820 this collective derivate yielded the specific alkaloid known as quinine; by 1852 it became known that, besides quinine, the "cinchonino" of 1815 includes other alkaloids—cinchonine, cinchonidine, and quinidine. The relative proportions of these alkaloids in particular kinds of cinchona remain unaffected by the variation in their percentages. In any sample of red bark one-half of the alkaloid-content is cinchonine, one-third quinine, one-sixteenth cinchonidine, only one-eightieth quinidine; the remainder—about one-eighth—is amorphous. But the relative proportions of these alkaloids differ in different kinds of cinchona bark. In red bark quinine forms but one-third of the alkaloid-content; in crown bark it forms three-fourths. In yellow bark the proportion of quinine is higher than in crown; in grey bark that proportion is lower than in red. When quinine was first isolated in 1820 yellow bark was the kind of most importance to pharmacy; quinine therefore became, and still remains, the only cinchona alkaloid that is officinal. Being the officinal alkaloid, quinine is the one chiefly prescribed and the one chiefly separated from cinchona bark in the factory. The manufacturer, when purchasing bark, pays for it in terms of its quinine-content; the planter, when establishing a plantation, stocks it with the kind of cinchona his environment will permit to thrive that is richest in quinine. It costs the manufacturer about as much to work up, and it costs the planter about as much to produce, a bark poor from the quinine standpoint, as it does to produce and work up a rich bark. The cinchona planter still grows some red bark because this is still required by pharmacy for officinal "bark preparations." But the quinine manufacturer no longer purchases red bark or grey, and the planter no longer raises any grey, nor will he grow crown if the environment and adaptability factors do not inhibit cultivation of yellow bark. Such, then, are the economic relationships of cinchona bark and its alkaloids.

These relationships are sometimes misunderstood. It has been said that bark production was abandoned in Ceylon because "cinchona, planted without scientific advice, began to deteriorate." It is believed that this has happened in South India owing to the establishment of a cinchona monopoly by Java. What happened in Ceylon was that, when coffee cultivation came to an end, cinchona cultivation was taken in hand. Ceylon, like South India, had to grow crown bark. When Ceylon began to harvest her cinchona the prices received were lower than the prices paid to Java for yellow bark. Ceylon, without hesitation, gave up cinchona and cultivated tea. The same economic factor has led to the abandonment of cinchona cultivation by private enterprise in South India.

The So-called Cinchona Monopoly.

What has been described as a cinchona monopoly in Java is no more than a *quinine* monopoly. That monopoly is not the creation of Java; it is a consequence of the fact that yellow bark, which does not thrive in South India, grows better in Java than in any area, outside Bolivia, where it has been tried. The preference of the planter everywhere for yellow bark is a result of the fact that the quinine-maker pays a better price for that bark. The action of the quinine-maker is itself a result of the accident that the hygienic relationships of quinine differ from those of the other alkaloids of cinchona bark. These hygienic relationships themselves appear at times to be misunderstood. Quinine may be the most valuable of the crystallisable alkaloids of cinchona bark; it certainly is not more valuable than the amorphous. Were this appreciated, we might be spared complaints as to the world-shortage of quinine. The manufacturer, who ought to know, seems to think these complaints exaggerated. Meanwhile the Java planter is less than content with the price he receives for his bark and explains that he cannot market all that he grows. This suggests over-production rather than shortage. Java, so far from establishing a monopoly, must have lost control of the bark market.

One consequence of this particular misunderstanding has been that our own dominions are unable to produce all the cinchona bark and its alkaloids that they require. To some this does not appear a serious matter; shortage of a remedy for malaria lends vigour to the crusade against its cause. We can appreciate this feeling: "prevention is better than cure." But others feel that, until malaria prevention has become more general, the provision of a recognised remedy remains a public duty. Medicine therefore urges the State to extend the cultivation of cinchona, within the Empire, wherever it can be grown. The appeal of medicine might carry greater weight if fuller account were taken of the effect on the economic relationships of cinchona of its hygienic relationships for which she is ultimately responsible. Medicine does not overlook these entirely; she regards all the alkaloids of one kind of cinchona as worthy of use, so long as they remain unseparated from the bark. It is only after the alkaloids have been separated from their bark that medicine feels constrained to regard all but one of them as unimportant. Even if it were true that quinine be a more effective remedy for malaria than its companions, it remains for consideration whether the treatment of these other alkaloids as waste products of no value be wholly justifiable. It is to this action on the part of medicine that the economic relationships which now exist owe their origin. If medicine can see her way to some modification of her present attitude, conditions that hamper State action and distress us all might disappear; full advantage could then be taken of cinchona bark and its alkaloids.

HEALTH CONFESSIONS OF BUSINESS WOMEN.

ON the principle that the wearer of the pinching shoe is best able to locate the pain, the Provincial Board of Health of Ontario has organised an inquiry among business women by business women into their mode of life. In the autumn of 1922 the Board's Division of Industrial Hygiene offered prizes for the best letters by business women on their health problems and solutions. The advertisement of this competition yielded between 200 and 300 letters, and these have been carefully edited and annotated so that excessive overlapping is avoided. The problems discussed are classified under such headings as The Psychology of Health, Board and Lodging, and Personal Maintenance. Thanks to the anonymity of pen-names, great frankness was encouraged, and it is evident from a perusal of this compilation[1] that the correspondents threw themselves heart and soul into the task of pooling their experiences for each other's benefit. The result is a book full of the hard-earned philosophy of office life, a human record of tears and smiles. In the matter of food alone there is a great wealth of wisdom tapped. The business woman has found that she must not satisfy a beefsteak appetite with warmed-up maccaroni, and that at 4 o'clock every day "you can see the 'cream-puffers' giving out—just about the time the 'midday diners' are waking up." It has also been found wise to board where men are boarding, to eat what men are eating—meat, vegetables and bread, not pastry and tea. One candid correspondent writes: "Cheap, badly cooked, greasy food and rich things affect my complexion right off, and I'd rather have a cheap hat than a 'cheap' skin, wouldn't you?" With regard to bodily cleanliness and habits, little faith is pinned on the sponge bath which *sounds* all right, but in practice is apt to dwindle and dwindle. "No girl can be self-respecting or respected if there is a 'low-water mark' anywhere on her." Another correspondent expresses the same thought in the brief sentence, "I always try to dress so I could be run over any day." Another urges her fellow-workers not to expect a gold locket or a string of pearls to be a sufficient covering for the chest. And so the stream of helpful, candid advice runs on, one little trick of the trade or labour-saving advice after another being thrown into the "pool." There are many shrewd hints on the psychology of life, and a wondrously wise correspondent writes that she cultivates the friendship of at least one girl who giggles and has the capacity for seeing humour in all things. Again and again this piece of advice appears: "Never yield to self-pity." Another maxim on the same line of thought is: "You may be more unlucky than many people, but you are more lucky than many others, so don't forget it." And "our own troubles seem never so large after we have listened with understanding and sympathy to the greater troubles of others." A juvenile correspondent who signed herself "Dimples" proffered the following piece of advice, which was doubtless the outcome of a vast experience: "For bad temperedness and depression, I have found it a good idea to have a cold wash and change of clothing." Though this book has been compiled for the benefit of business women, it is one which every employer, male as well as female, should study carefully, for it reveals the soul of a large class in the community.

MEDICAL SUBSCRIPTIONS AND INCOME-TAX RETURNS.

To the Editor of THE LANCET.

SIR,—For some months past we have been in communication with the Board of Inland Revenue with a view to obtaining subscriptions to certain medical societies allowed as an expense against the income of medical practitioners. Many inspectors of taxes have refused to pass these items, but in one case with which we have been dealing we have now received a letter from the inspector concerned from which the following is an extract: "With reference to previous correspondence, I am now advised that by recent Board's Order the subscriptions to the British Medical Association, London and Counties Medical Protection Society, and British Medical Protection Society may be allowed as a business expense." It would appear from the above that our efforts have been successful, and medical practitioners should note that any subscription paid to the above societies may be included in their expenses.

We are, Sir, yours faithfully,

HARDY AND HARDY,
Taxation Consultants.

292, High Holborn, London, W.C., June 3rd, 1924.

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[1] Health Confessions of Business Women by Business Women. Pp. 265. Copies can be obtained on application to the Division of Industrial Hygiene, Provincial Board of Health, Ontario.

An Account
OF THE
TUBERCULOSIS OBSERVATION WORK OF THE MINISTRY OF PENSIONS.

Based on papers read before the Tuberculosis Society on March 14th, 1924,

By ALEX. SANDISON, M.B., B.C. Camb., B.Sc. Lond.,
ASSISTANT DIRECTOR OF MEDICAL SERVICES ;
AND
G. BASIL PRICE, C.M.G., M.D., F.R.C.P. Lond.,
DEPUTY COMMISSIONER OF MEDICAL SERVICES (TUBERCULOSIS).

I. Preface on Organisation.
By Dr. Sandison.

Accurate diagnosis of tuberculosis is at all times a matter of great importance, but to the Ministry of Pensions such accuracy is specially essential, for dependent upon the diagnosis of this disability is the acceptance or rejection by the State of a liability extensive both in time and in amount. I do not propose to discuss the questions involved in a decision as to whether or not an existing tuberculosis in an ex-Service man can be accepted as attributable to or aggravated by war service. Such problems of "entitlement," as they are technically termed, in allusion to the entitlement to pension which is involved, are peculiar to the Ministry and absorb a very material proportion of its time and work. Happy are they who need take no thought of such subtleties. Before, however, entitlement can be considered it is essential that the Ministry should know precisely what is the condition for which entitlement is claimed. The term "debility," for example, is one which covers a multitude of pathological conditions of which tuberculosis obviously is one. The private doctor, dealing with a case of debility accompanied by some prima facie evidence of past or present tuberculosis, can often act on the assumption that tuberculosis is the causal factor, and though he may not necessarily give a definite diagnosis of tuberculosis to the patient, he may yet prescribe general and special treatment which, if tuberculosis is really present, will certainly do good, but if it is not will do no harm and may quite possibly cure the debility without it ever being known what was the actual cause. Such treatment, though more or less empirical, is frequently abundantly justified by results. The debility departs, the patient rejoices, and the affair is over. If, however, the patient is an ex-Service man who claims that his debility is consequent on war service, the matter at once becomes much more complicated. Suppose "debility" as such is accepted as due to service, the State may then be committed to the responsibility of treating indefinitely a condition which is simply the common factor of almost innumerable pathological conditions and which may recur from time to time from totally different causes. If, however, a prima facie ætiology of tuberculosis is accepted, and entitlement is given definitely for tuberculosis, the State has then accepted responsibility for a condition of very serious portent and implication. Thus, as regards entitlement, true justice can only be done, to the man and to the State, by attaining the greatest possible accuracy of diagnosis.

It soon became apparent in the work of the Ministry that the existing diagnoses of tuberculosis in ex-Service men lacked in many cases that necessary precision. Tuberculosis was at times diagnosed during service on evidence which would not have been accepted had the necessary time and facilities been available to investigate it fully. Even a record of tubercle bacilli being found in the sputum could not always be accepted as gospel truth. On the other hand, disordered action of the heart, neurasthenia, malaria, pyrexia of unknown origin, were army diagnoses which not infrequently masked a true tuberculous condition.

Thus before the war had long been over there were numbers of pensioners with, on the one hand, an entitlement for a tuberculosis which did not exist, and on the other a lack of entitlement for a tuberculosis that did. Add to these cases the steady stream, not yet run dry, of those who submitted claims for entitlement for a tuberculous condition which revealed itself subsequent to discharge from the Service, and it needs little imagination to see that it became an urgent necessity for the Ministry to make sure that the most modern and efficient methods available were utilised for obtaining the evidence upon which entitlement for tuberculosis was to be based. Obviously the first line of defence was the tuberculosis service of the country, to which, in view of its existing extensive organisation and facilities, the function of treating the tuberculous "other rank" pensioner had been delegated by the Ministry. Tuberculosis officers were in direct charge of these pensioners, and to them, therefore, the Ministry applied for evidence as to the presence or absence of tuberculosis in individual cases. As time went on, however, three things became apparent.

1. The facilities for full and complete observation of doubtful cases of tuberculosis varied very greatly in different parts of the country, and true observation wards were rarely available.
2. Considerable divergence of opinion existed as to the relative value of different diagnostic criteria, and the "personal factor" of the tuberculosis officer could not be effectively equated.
3. Tuberculosis officers, not unnaturally, were inclined to attach special importance to an already existing diagnosis if it was recorded officially in army or pensions documents.

In 1920 the Ministry arranged for 100 cases taken at random of men pensioned for tuberculosis to be subjected to a comprehensive expert examination, and it then appeared that about one-third of these were wrongly diagnosed as tuberculosis. Other evidence, pointing to similar conclusions, accumulated from various directions, and finally, after consultation with the Ministry of Health, the Ministry decided to provide for itself full facilities for the complete investigation of doubtful cases of tuberculosis amongst pensioners. For this purpose, early in 1922, wards were allotted in certain Ministry hospitals throughout the country, the hospitals chosen being well equipped with laboratory and X ray facilities. The total number of beds so allotted has averaged over 200 for England and Scotland since that time. In Wales special arrangements were made with the Welsh National Memorial Association for observation to be carried out in their sanatoria.

It was an essential part of the scheme that the observation should be conducted in a uniform manner throughout the country, and that the duty of arranging for such observation and of making a definite decision on the evidence thus obtained should be placed in the hands of a small number of specially qualified medical officers whose methods and results could be coördinated through headquarters. Seven such officers (Deputy Commissioner of Medical Services, Tuberculosis) have been appointed, their activities covering England, Scotland, Wales, and Ireland. Their duties, however, are not limited to the control of these observation beds ; they act also as general liaison officers between the Ministry of Pensions and the tuberculosis officers of the country, and are more or less directly concerned in all that affects the pensioner, officer, nurse or man, who has, or who claims to have, entitlement for tuberculosis, pulmonary or surgical.

A time limit of 28 days is set for the period of observation, and the average stay of each case is about three weeks. Thus every three or four weeks for the past two years some 150 cases of doubtful tuberculosis have been systematically investigated by a standard routine by the Ministry, and the results recorded in a comparable manner. It will be seen that in this direction the Ministry of Pensions has been and is carrying on work which, in addition to its great value to the Ministry itself, is providing most valuable information for all tuberculosis workers and to an extent never previously accomplished in this country.

It is not as yet either possible or desirable to set out the total results of the work throughout the country, but the facts and figures which Dr. Price submits are fully representative of the results obtained by his colleagues elsewhere, and the deductions he makes from his experience are largely justified and strengthened by their experience also. The Ministry's regulations are, naturally enough, not easily understood by those who touch its work at the periphery only, and to whom it is neither a duty, nor can it be a pleasure, to seek to fathom the intricacies of pensions administration. Such intricacies are the inevitable accompaniment of so gigantic an organisation, started as it was in time of war and faced with problems hitherto unknown and with complications unpredictable. The Deputy Commissioners of Medical Services (Tuberculosis) are the interpreters to tuberculosis officers of these intricacies; in this liaison work they have been of real service. The duty and responsibility of the Ministry of Pensions as regards those receiving or claiming pension for tuberculosis is complementary and supplementary to that of the tuberculosis officer. The Ministry must satisfy itself that the diagnosis is clear because it is the authority that must meet the cost of pension and treatment if "entitlement" is granted; it must be the authority for deciding on "entitlement" since with it alone are the full war records of each case; and it must provide the necessary treatment when, as in the case of officers and in certain areas surgical tuberculosis cases, the treatment is not normally provided by the existing schemes of local health authorities.

II. REVIEW AND ANALYSIS OF CASES.

BY DR. PRICE.

Amongst discharged soldiers diseases of the respiratory system occupied a prominent position, as was indeed to be expected. The use of poisonous gases in warfare had introduced a new factor in the causation of respiratory diseases, and prolonged exposure in trench warfare through all seasons of the years, combined with periods of comparative inactivity in the worst conditions of climate and life, were important predisposing causes. A relatively large number of men were thus "invalided" for the sequelæ of gas poisoning, and for types of respiratory affections also common in civil life, particularly tuberculosis. In June, 1923, there were nearly 40,000 pensioners suffering from tuberculosis, including some 3300 non-pulmonary cases.

The symptoms of a depreciated physical state, loss in weight, chronic cough with sputum, reputed "coughing up of blood" (a statement which obtains in many cases a too ready credence), and on examination, the presence of slight physical signs—e.g., crepitations, probably more marked or persistent in one lobe of a lung than another—were common enough in these men returned from the war, and thus it is easy to understand that diagnoses of tuberculosis were made in a great number of cases. Hospital accommodation, moreover, was taxed in all directions at the time, and systematic observation was impossible for checking the diagnoses. In addition, medical opinion tended to assume that men who had suffered exposure to gassing would, a priori, be more prone subsequently to develop tuberculous infection. In men returning from the East, debilitated by malaria and dysentery, the transient chest symptoms, present in many on return to a colder climate and English winters, were viewed more gravely than after-experience proves to have been necessary.

Again, soldiers returning from abroad were anxious to be demobilised without delay, and a large number failed to make proper use at the time of discharge of the opportunity afforded for claiming consideration for disabilities they considered to be then present. Many, too, feeling comparatively fit on return, did not foresee the possibilities of a failure in health. Following the vicissitudes of civil life—unemployment and deprivation to some extent of the necessities of life—old symptoms returned, or slight conditions of ill-health became emphasised and more pronounced. A constant series of new claims therefore came to be considered; and though the lapse of time will eventually end these fresh claims, the Ministry must give full consideration to them, and their possible relationship to service. Many doubtful cases thus need to be investigated, and arrangements have been made for selected hospitals to provide accommodation for their adequate examination.

The pensioners admitted for this purpose from what is known as the London Region (bounded roughly by a line drawn across the map from the Wash to the Solent or Channel Islands) go to the Ministry of Pensions Hospital, Orpington, where 80 or more special observation beds are available as required, together with complete facilities for laboratory and X ray investigations. A visiting staff of specialists is also available for consultation.

It is proposed here: 1. To outline briefly the scope and methods of the investigations. 2. To give a brief analysis of the first 500 cases investigated, with comments on the factors of gassing, gunshot wounds of chest, and syphilis in relation to the incidence of tuberculosis and other chest disabilities. 3. To estimate and comment on the relative value of special methods of research; comparing the results of clinical, pathological, and X ray findings.

1. *Scope and Methods of Investigation.*

The importance of as thorough an examination as possible was quickly realised; any disabilities that might subsequently arise would then be more definitely dated as to time of origin, and the connexion or non-connexion with the invaliding disability more readily established.

The examinations are divided into three sections, all of which are carried on more or less concurrently: (1) Clinical; (2) pathological; (3) radiographical.

1. *Clinical Investigations.*—On admission the pensioner is kept in bed for the first four days, during which period rectal and mouth temperatures are recorded four-hourly. Subsequently, when the patient is up and about, the temperature (rectal) is taken only night and morning. An attempt has been made roughly to gauge the effects of exercise on body temperature, provided the case is suitable, by arranging for three exercise-temperature tests. During the warmer weather, 20 minutes fairly heavy work is provided, under supervision, in the grounds of the hospital, such as digging, rolling, or other equivalent. In unsuitable or cold weather, physical exercises are carried on in the gymnasium. Immediately on the completion of this exercise the men return to their ward, are kept in bed an hour, during which the rectal and mouth temperatures are taken at half-hourly intervals, until the temperature has reached a normal level; observations on the pulse and respiration are also noted.

Each case is under daily clinical observation by a resident medical officer who has had special experience in chest work and who makes full notes of his frequent examinations. The final clinical report is thus based not on a single observation, but upon a series of examinations, which are of great service in determining the persistence or transient nature of certain physical signs. Every region of the body is overhauled, and any symptoms, even apparently alien to the disability actually in question, are followed up to elucidate any possible inter-relationship. Thus, fractional test-meals, barium meals, examination of resting gastric juice for tubercle bacilli, sigmoidoscopic and cystoscopic procedure (including examination of ureteral urine) may all on occasion be required.

For the conclusions embodied in the final reports the Deputy Commissioners in Tuberculosis are personally responsible after their own examination of the man, and these reports are made after the clinical findings have been correlated with the findings from other departments, and the case viewed in the light of all available evidence.

2. *Pathological Investigations.*—When sputum is available, at least five examinations are made from the morning sputum, or from a 24-hour specimen to determine the presence of tubercle bacilli. As a rule the first test is made using the antiformin method, as in many cases the pensioners have had a fairly long journey, which may excite a slight rise of temperature and a freer expectoration of sputum. In addition, the complement-fixation test for tuberculosis is carried out, and the Wassermann reaction noted for purposes of control. Von Pirquet's tuberculin skin reactions are tried; tuberculin O.T. (human), as supplied by Burroughs and Wellcome, being used in dilutions of 1–10, 1–100, 1–500 with a control; special attention is given to the area and depth of infiltration resulting.

In making the film examinations for tubercle bacilli the possible presence of spirochætosis, mycelial or other infection is kept in mind. One case of nocardial infection, for instance, was found, presenting an interesting clinical state and peculiar sputum characters; the condition had for some years been regarded as tuberculosis. Elastic tissue fibres have rarely been found in the type of case under observation. Sputum albumin has been estimated as a routine observation, so that the results might be compared in parallel with other tests. The urine is fully tested at least twice, and if pus cells are present or urinary symptoms occur, the urine is also examined for the presence of tubercle bacilli. Tubercle bacilli have occasionally been found in the stools when absent from other discharges. Animal inoculation is occasionally required. Laryngological, aural, nasal examinations are made by the consulting laryngologist attached to the hospital.

Diagnostic tuberculin is not now employed. The risk of revival of an apparently arrested or quiescent infection cannot be ignored and the Ministry considered that such a risk was not justifiable.

3. *Radiographical Reports* from screen and film examinations are included in all cases.

2. *Analysis of 500 Cases Admitted for Investigation.*

While diagnosis of a suspected tuberculous lesion is, as a rule, the main problem confronting those responsible for the investigations, it is by no means the only one. Thus it is frequently stated that information is needed as to whether the patient has tuberculosis or has *ever* had it; if present, how long has it existed, and is the condition connected with service? It is appropriate here to point out that whilst a private doctor or even a tuberculosis officer can alter his diagnosis at will according to the variations in the evidence from time to time, the Ministry, once having accepted a definite diagnosis and granted an entitlement thereon, must require very definite contrary evidence before it can officially alter the diagnosis. Mere suspicion and doubt of a diagnosis are not adequate when considerable issues (often of a financial character) affecting the pensioner are involved.

Continued entitlement for tuberculosis does not imply necessarily that continued treatment is required, but simply that the pensioner has been accepted by the Ministry as one who has present, or has had past, disease. On the other hand, it is to be noted that a phrase is often found in reports from tuberculosis officers to the Ministry to the effect that a pensioner has no *active* tuberculosis, or has no evidence of *present* tuberculosis, and this, though probably not meant to imply "no past disease," is open to such interpretation. Misunderstandings at times have occurred, and these would be obviated if this kind of statement was amplified to make clear the opinion as to past disease. Of the 500 cases referred to, 243 had entitlement for pulmonary tuberculosis, and of these 37 had records of tubercle bacilli having been found at least once, the remaining 206 had been diagnosed on clinical grounds, and there were no records of tubercle bacilli having ever been found present in the sputum.

As will be best seen from the attached table eight out of the 37 were still T.B. +, and one was clinically active; 20 showed a quiescent condition, while in eight cases there were grounds for considering that the diagnosis should have been a non-tuberculous condition.

Results of Investigation.

A = Number of cases investigated.
B = Tuberculosis, T.B. positive.
C = Tuberculosis active, T.B. negative.
D = Tuberculosis quiescent, T.B. negative.
E = Bronchitis, asthma, fibrosis.
F = Fibroid pneumonia and other non.-Tb. conditions.
G = Nil disability.
H = Syphilitic conditions.
I = Cystitis.
J = Diagnosis unaltered.

Invaliding disability.	A	B	C	D	E	F	G	H	I	J
Tuberculosis—										
T.B. pos. (pulm.) ..	37	8	1	20	7	1	—	—	—	—
T.B. neg. (pulm.) ..	206	13	5	101	75	1	6	5	—	—
Fibroid phthisis	28	1	1	10	10	5	1	—	—	—
Bronchitis, fibrosis, &c. ..	79	3	1	23	51	1	—	—	—	—
Non-pulm. tuberc. ..	23	10 S*	—	—	—	11	1	—	1	—
Non-tuberc. lung conditions	3	—	—	—	—	3	—	—	—	—
Gunshot wounds—										
F.B. not retained ..	12	—	2	2	3	—	—	—	—	5
F.B. retained	8	1	—	1	2	—	—	—	—	4
Surface chest wounds ..	7	1	—	1	—	—	—	—	—	5
V.D.H.	7	1	—	—	1	—	—	—	—	5
D.A.H.	8	—	1	3	3	—	—	—	—	1
Pleurisy	9	3	—	4	1	—	—	—	—	1
Effects of gassing ..	14	—	—	2	12	—	—	—	—	—
Debility	20	1	—	4	10	4	1	—	—	—
Tuberc. laryngitis ..	1	1	—	—	—	—	—	—	—	—
Non-tuberc. ,, ..	1	—	—	—	—	—	—	—	—	1
Trench fever	1	—	—	—	1	—	—	—	—	—
Malaria	14	1	1	4	5	1	—	—	—	2
Nephritis	4	—	—	—	—	—	—	—	—	4
Pneumonia	1	—	—	1	—	—	—	—	—	—
Rheumatism	1	—	—	—	—	—	—	—	—	1
Chronic synovitis ..	2	1	—	—	—	—	—	—	—	1
Renal calculus	1	—	—	—	—	—	—	—	—	1
Empyema	3	1	—	—	—	2	—	—	—	—
Neurasthenia	3	—	—	1	—	1	—	—	—	1
Hæmoptysis	4	2	—	2	—	—	—	—	—	—
Gastric ulcer, gastritis ..	2	—	—	—	—	1	—	—	—	1
Dysentery	1	1	—	—	—	—	—	—	—	—
Totals	500	49	12	179	181	31	9	5	1	33

* S = surgical.

As regards the 206 cases of pulmonary tuberculosis in which tubercle bacilli were never previously found, in 13 tubercle bacilli were discovered in the sputum, or in one or other of the body discharges. In one of these cases clumps of an acid-fast bacillus, considered to be the tubercle bacillus, were recovered from the resting juice of the stomach, though not obtained from the sputum. There are, of course, fallacies to consider in such a method, but, on the other hand, when correlated with other clinical and special evidence, the result may be of importance. Five other cases were clinically active, whilst 101 cases showed evidence compatible with quiescent or in some cases arrested disease. In 75 it was considered the diagnosis should be altered to chronic bronchial affections, associated with varying degrees of fibrosis, asthma, or bronchiectasis. Five had conditions probably of syphilitic origin, one of which had special (venereal disease) treatment in a civil hospital by arrangement and materially improved. Fibroid phthisis was the invaliding disability in 28; this condition seemed particularly common in men coming from the Navy, many of whom were stokers. In only one of this group were tubercle bacilli found whilst under observation, one had clinically active tuberculosis, ten were quiescent, and in 16 practically no alteration in the diagnosis was made.

Of 79 cases admitted under the labels of chronic bronchitis, bronchitis and asthma, bronchitis and fibrosis, bronchiectasis, &c., but in whom tuberculosis was suspect, three had tubercle bacilli in the sputum, one showed tuberculous activity, 23 gave evidence of quiescent foci, largely masked by secondary conditions, and in 52 the diagnosis remained as before.

Epitomising therefore: Of 243 cases admitted with reputed and "entitled" tuberculosis 21 still showed tubercle bacilli positive (9 per cent.), six showed activity (2·5 per cent.), 121 (50 per cent.) showed evidence of old quiescent or arrested lesions, while in 95 (33 per cent.) there was no clear evidence of present or past tuberculosis. The non-pulmonary tuberculosis cases numbered 23; of these ten remained unaltered in diagnosis, 13 were found non-tuberculous.

The various conditions (non-tuberculous) in which tuberculosis had been suspected make a lengthy list. The final results in the 500 cases are as follows :—

	Per cent.
Tubercle bacilli discovered in sputum or discharges (this includes ten surgical, decided on clinical grounds) ..	9·8
Active pulmonary tuberculosis, but no tubercle bacilli found	2·4
Quiescent or arrested pulmonary tubercle (the majority with secondary bronchitis and fibrosis)	35·8
Insufficient present evidence on which to diagnose tuberculous infection	52·0

Syphilitic Infection and its Relation to Chest Disabilities.

The Wassermann reaction carried out as a control to the complement-fixation test proved to be positive in 44 cases out of 500—that is to say, 9 per cent.; few of these showed overt symptoms of syphilis, though an actual history of past venereal disease was obtained from a good many. In these 44 cases, 41 had a double plus reaction, and three a single plus or weak reaction. Tuberculosis was present in ten of the 44, three had tubercle bacilli in sputum, one had active tuberculosis but the sputum contained no tubercle bacilli, six had quiescent tuberculosis, one had doubtful tuberculous or syphilitic lesion of the lung, seven had marked pulmonary fibrosis probably of specific origin, 18 had chronic bronchial conditions with fibrosis, most of these showed considerable debility, five had non-pulmonary lesions.

The object of drawing attention to this specific infection as being present in 9 per cent. is to emphasise the probability of it being a marked factor in the persistence of debility accompanying the various chest conditions. A few cases who have placed themselves under treatment, and whose histories it has been possible to follow up, have shown decided improvement in their chest disabilities.

Tuberculosis and Gassing.

The early gas attacks of the Germans began in April and May, 1915. Chlorine was the gas first employed, released from cylinders, and allowed to drift when a favourable wind was blowing. Later, in 1915 and in 1916, lacrymatory gas shells were also in use. In 1916–17 more lethal gases such as phosgene ($C.O.Cl_2$), chlor-methyl and trichlor-methyl-chloroformate, chloropicrin ($C.Cl_3NO_2$) and others were utilised, and in 1917–18 in addition mustard gas (di-chlor-ethyl sulphide) and various arsine compounds were used singly and mixed. Those mentioned are all lung irritants, and in one example also vesicant. The immediate results and the pathological changes resulting in intense œdema of the lungs, rupture of the alveolar walls, patchy emphysema and thrombosis of capillaries are so well known and described by Edkins, Shaw, Dunn, Winternitz, Soltau, and in the official history of the war, Vol. II., that no full reference here is needed. As regards later and remote effects, it is probable that more knowledge will be forthcoming. The French mention cicatricial changes in the lungs, bronchiolitis obliterans, and bronchiectasis as later after-effects; also local thrombosis in the lungs, or more remote organs such as the brain and kidneys.

Of 188 Canadians investigated four years after being gassed, 54 showed no ailment; 78 had irritable heart; 26 had bronchitis and asthma; 18 had neurosis; and 12 were not traced. No case of this series had proved pulmonary tuberculosis, though several showed prolonged low fever, loss of weight, profuse perspiration, similar to those termed by Achard and Flandin as pseudo-tuberculosis.

Reference has been previously made to the early predictions that tuberculous developments would be common in gassed cases, but general experience has negatived this presumption. In the analysis of the 500 cases under investigation it thus came rather as a surprise to find the incidence of proved tuberculous infection and quiescent disease was much higher than in the Canadian and other statistics. It must, however, be remembered that all the cases investigated at Orpington are selected cases, with lung symptoms, in whom tuberculosis is already suspected or had been diagnosed. Such figures as are here given would have, therefore, to be corrected against the incidence of tuberculosis in the average industrial population, and correlated with the percentage of tuberculosis in a sample series of all pensioners who had been gassed. The "gassed" cases numbered 92 out of the 500. They are divided into two groups: (1) in which official records prove the pensioner to have been admitted to hospital for effects of gassing; (2) when there was no official record, but the patient volunteered the statement that he had been gassed, but only requiring regimental treatment was not admitted to hospital, and was able to return to duty after a brief period. Obviously these cases were light and the gassing could hardly be expected to leave permanent after-effects.

Group 1. (70 Cases.)

	Cases.
Documentary evidence of tubercle bacilli in the sputum before this investigation	8
Tubercle bacilli discovered in the sputum for the first time while under observation	4
Evidence of tuberculosis (active) but T.B. negative ..	1
Apparently quiescent lesions and T.B. negative. (These probably correspond to the pseudo-tuberculosis cases of other writers)	17
Non-tuberculous conditions, principally bronchitis, emphysema, asthma	34
No chest disability	6

Group 2. (22 Cases.)

	Cases.
Evidence of active tuberculosis and tubercle bacilli were present in the sputum	3
Evidence of quiescent tuberculosis, T.B. negative ..	3
Various bronchial conditions (non-tuberculous)	15
No pulmonary disability	1

There is therefore a heavier incidence of positive and active cases in Group 1 as compared with Group 2.

In the total of 92 gassed cases 16 cases (17·4 per cent.) were active or had been suffering from active tuberculosis. Twenty cases, or 21·4 per cent., showed evidence of quiescent disease, but had always been, so far as records showed, T.B. negative.

The diagnosis in these cases is a matter of opinion, but in this series it would appear that 38·8 per cent. of gassed cases gave evidence of tuberculosis, active or quiescent. The fact already mentioned that the whole 500 cases investigated are "selected" probably explains this high figure, which cannot therefore be taken to apply to gassed cases as a whole. Of the 14 cases admitted for "effects of gassing" none showed active tuberculosis or positive sputum, two gave signs of quiescent disease, and 12 were suffering from non-tuberculous bronchial conditions. Previous to March, 1920, "gas" cases were included in the Ministry's statistics under the heading of "chest complaints," this heading also included tuberculosis and bronchitis, the total being 95,132 up to March 31st, 1920; from that date a further 2604 "gas" cases have been awarded pension.

It will readily be recognised, therefore, that the results obtained in these 92 cases suspected of having tuberculosis form no definite criteria as to the incidence of tuberculosis in the total number of gassed cases.

Gunshot Wound of the Chest and Tuberculosis.

Schuller's early experiments on animals demonstrated the apparently direct influence of traumatism in localising and developing tuberculosis in bones and joints. Achard, V. Friedländer and others, repeating these experiments under stricter conditions, came to different conclusions. The rôle of traumatism is generally considered to be limited in its relation to the development of tuberculosis. More recently Imber, Oddo, and Chavarnac in their "Accidents du Travail" have again drawn attention to the subject, and definitely consider that traumatism may induce by inoculation a localised tubercle, aggravate existing or latent tubercle, or even cause a generalisation of pre-existing tubercle. Severe and extensive injuries, they state, are not followed by tuberculosis nearly so frequently as injuries provoking less severe re-actions. War experience tends only in general to corroborate this view. They, however, quote Sergent, Bernard, and Challamel in support, and consider that wounds of the chest producing little immediate effects may several years later be the starting-point of pulmonary tuberculosis.

These considerations therefore lend interest to the 27 cases of gunshot wound of chest in our series suspected of having tuberculosis. I have grouped them into three classes.

1. Foreign body not retained (penetrating wound)	12
2. ,, ,, retained ,, ,, ...	8
3. Surface, non-penetrating wounds	7

In Group 1 the diagnosis of sequelæ of gunshot wound (chest) remained unaltered in five, in two evidence of active tuberculosis (sputum negative) was present, two showed evidence of quiescent (tubercle bacilli negative) tuberculosis, and three had broncho-fibrotic (non-tuberculous) conditions.

In Group 2 one case was found to have positive sputum, one showed quiescent tuberculosis, and three were of the bronchitic (non-tuberculous) type, while four remained unaltered in diagnosis.

In Group 3 one was tubercle bacilli positive, one quiescent, and five were unaltered in classification.

The frequent and persistent recurrence of hæmoptysis in these cases is a disturbing feature, and is the main cause for suspicions of tuberculosis being aroused. There are some clinical considerations with regard to hæmoptysis (recurrent) in gunshot wounds of the chest which are worth discussing. Unless there is an obvious irritant retained, the hæmoptysis in gunshot wounds of the chest tends to improve as years go by. It may be completely absent while the patient keeps at rest or uses a minimum of exertion. As soon as he tries to get about to live a more ordinary life and exposes himself to physical stress the hæmoptysis is apt to recur and is somewhat proportional in severity to the exertion apparently exciting it.

Tuberculosis, as these figures show, may supervene, and cases do occur which present very puzzling problems as to whether it is the tuberculous infection or other sequelæ of the original traumatism which are responsible for the hæmoptysis and existing condition.

3. *Relative Value of Clinical, Pathological, and Radiographical Evidence in Investigations of Suspected Tuberculosis.*

It has been a matter of considerable interest to compare, side by side, the clinical, pathological, and X ray evidence of tuberculosis in the 500 cases under observation. Apart from the presence of tubercle bacilli being demonstrated in the discharges, it was hoped that the complement-fixation test would be capable of development and prove to be a test comparable in certainty to the Wassermann. These hopes have not been realised to the extent hoped for, though the complement-fixation reaction may be decidedly helpful in suggesting the probable infection responsible for dubious clinical signs. At times, however, it is negative even when undoubted infection is present, or is perversely positive in apparently non-tuberculous cases. Besredka's antigen was used throughout; it has varied in sensibility at times, depending probably on questions of technique in preparation. This antigen is obtained by culture of tubercle bacilli in media containing yolk of egg. The four days' old culture is killed at 120° C. An emulsion is then prepared and shaken up so as to obtain a homogeneous preparation.

In the following analysis the degree of reaction has been classified as follows:—

Deviation.

(1)	Under 1 minimum hæmolytic doses	.. negative.
(2)	1–2 ,, ,, ,,	.. doubtful.
(3)	3–4 ,, ,, ,,	.. positive.
(4)	4–5 or over ,, ,, ,,	.. strong positive.

The end-results obtained are here quoted.

The reaction was obtained in 124 cases as follows:—

Strong Positive, 27. Eight of these were tubercle bacilli positive; 1 was negative as to tubercle bacilli, though showing active symptoms and signs; 15 had quiescent tuberculosis; and 1 was surgical tuberculosis; the remaining 2 were not considered to be tuberculous.

Positive, 77. Of these 9 showed tubercle bacilli in sputum; 7 were active, but no tubercle bacilli were demonstrated; 52 had quiescent disease (3 originally being tubercle bacilli positive); 1 was a surgical case (joints); 8 were not considered to have tuberculosis.

Doubtful Reactions, 20. Three were tubercle bacilli positive; 12 had quiescent or arrested conditions; 5 were not considered to have tuberculosis.

It is to be remembered that positive Wassermann reactions were *not* present to complicate the findings in these cases. The total result therefore is:—

Positive or Doubtful Complement-Fixation Reactions, 120. Twenty tubercle bacilli positive; 8 tuberculosis active, but tubercle bacilli negative; 79 quiescent, negative (2 surgical tuberculosis); 15 non-tuberculous.

Negative Complement-Fixation Reactions, 118. Five had tubercle bacilli positive; 10 had active clinical signs and symptoms of tuberculosis; 100 were considered to have quiescent tuberculosis; 3 cases of genito-urinary tubercle also positive.

These results give the following percentages as regards the presence of complement fixation:—

(*a*) In known pulmonary tuberculosis (tubercle bacilli present) C.F.T. was positive in 80 per cent. of cases.

(*b*) In clinically active pulmonary tuberculosis (tubercle bacilli negative) C.F.T. was positive in 44 per cent. of cases.

(*c*) In quiescent pulmonary tuberculosis (tubercle bacilli negative) C.F.T. was positive in 44 per cent. of cases.

(*d*) In clinically non-tuberculous conditions C.F.T. was positive in 10 per cent. of cases.

The complement-fixation reaction may be also positive in varying degree in non-tuberculous cases. In this connexion one case may briefly be quoted because of its special interest due to verification by post-mortem.

Pensioner C. was a case of a long-continued irregular pyrexia—wasting, indefinite pains and discomfort in chest and abdomen, with at times chest symptoms of minor degree. The complement-fixation reaction on repeated examinations was found strongly positive over a period of time. The associated clubbing of fingers, with slight pulmonary signs at one apex, and later rapidly developing signs at one base seemed indicative of tuberculosis. No direct demonstration of tubercle bacilli could be made, but in spite of most thorough investigation alternative causes of disease could not be recognised, or visceral lesions found. Originally, he had suffered from malaria, when on service in the East. At the post-mortem, actinomycosis of kidneys, liver, and base of lung was found; a small calcareous and caseous (tuberculous) gland was present near the appendix and a healed fibrotic apex (tuberculous) of one lung, showed old infection with tuberculosis.

The following are some conclusions, based on the present analysis, as to the value of the complement-fixation test with Besredka's antigen (other antigens, including Punch's method of preparation, have only been used in a very few cases):—

1. A strong positive reaction suggests a tuberculous infection, but the degree of reaction is not necessarily proportional to the clinical condition and may be pronounced with a quiescent state of disease. A persisting and strong positive reaction should cause the clinical signs and symptoms

to be carefully scrutinised if tuberculosis is not clinically definite. Single observations, while suggestive, cannot be regarded as conclusive. Variation in results does occur, if the test be repeated at intervals.

2. A positive (weak) result does not give any decided indication in favour of tuberculosis though it may be a link in evidence when the type of infection is dubious.

3. The presence of a positive Wassermann much impairs any deductions from a complement-fixation test unless the complement-fixation test is of higher value than the Wassermann.

Sputum albumin was estimated in most of the cases, the sputum was shaken with three parts water, filtered, and boiled with acetic acid. The degree of albumin present was of no real help in estimating the presence of tuberculosis, nor did its absence exclude quiescent conditions.

Von Pirquet skin reactions were consistently carried out in a large number of the cases, Koch's old tuberculin being used in dilution 1–10, 1–100, 1–500, with a control. A scarifier was used in applying it to the skin. No consistent results were obtained in relation to the complement-fixation test; often-times the results were mutually contradictory. The skin reaction was absent in a number of cases diagnosed as tuberculosis, active and quiescent, including several with tubercle bacilli in the sputum or discharges.

Cultures from the sputum in a number of cases in which the bronchitic condition was emphasised showed the presence of an anaerobe described by Castellani, Douglas, Thompson. In these cases, some of whom had to be retained for treatment afterwards, vaccines containing the anaerobe caused very considerable improvement while remaining in hospital.

Radiographic Findings.

With reference to radiographic findings, in 127 cases the reports provided evidence tending to corroborate the positive clinical findings of tuberculosis. In other 66 cases, however, in which the clinical findings showed the presence of tuberculosis (including six tubercle bacilli positive, and five active but tubercle bacilli negative), the radiographic reports did not indicate the presence of tuberculous conditions and the lungs were reported as having slightly or no abnormal features present. While the accessory value of these examinations is very valuable, to obtain maximum benefit from X ray findings it is desirable that:—

1. A more uniform nomenclature by radiologists should be in use, particularly in the meanings they attach to the much-abused word "fibrosis."

2. Fuller appreciation by the radiologist of the clinical aspect of the case and past history of the patient would often tend to prevent the apparent contradiction of clinical and radiographical evidence.

3. In collaborating for investigation it is well for one radiologist to be responsible for X ray findings so as to secure uniformity in the consideration of films. It is not unusual to find diverse reports on the same patient within a brief period of time, when different radiologists are concerned in the readings.

Perhaps in no part of X ray work does experience in reading chest films and screen work more greatly enhance the value of the reports. It is perhaps well to recognise that no case of pulmonary tuberculosis which has been already diagnosed on cogent evidence should be considered non-tuberculous because the X ray may not corroborate this finding.

In conclusion, while each section of the investigation may contribute valuable information and provide links in the chain of evidence, in the end it would appear that apart from finding tubercle bacilli in sputum or discharges reliance must chiefly be placed on clinical evidence.

We are indebted to the Director-General of Medical Services of the Ministry of Pensions for permission to publish these papers.

HYPERGLYCÆMIA AND GLYCOSURIA IN ACROMEGALY.

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M.R.C.P. Lond.

With Pathological Report by Prof. Hubert M. Turnbull, M.D. Oxf.

(*From the Medical Unit, London Hospital.*)

The discovery of insulin, with the resulting proof of the pancreatic origin of diabetes mellitus, has given an impetus to the study of the other forms of disturbance of carbohydrate metabolism which lead to glycosuria. Of these, one of the most interesting is the glycosuria which often accompanies acromegaly, a severe example of which is the subject of this report.

A Case Related.

J. S., female, aged 42, was admitted to the London Hospital Feb. 10th, 1921. The patient was a typical acromegalic. She first complained of headache in 1914. Enlargement of the extremities was first noticed in 1916. She was admitted because of unbearable headache and rapidly progressing optic atrophy with loss of vision.* Thirst was first noticed eight months before admission, it became intense, and her doctor discovered sugar in the urine. In spite of restricting her sugar intake, this thirst had persisted.

Condition on Admission.—The urine contained 10 per cent. of sugar and acetone bodies in large quantity; the blood-sugar was 0·43 per cent. Dietetic treatment was begun on Feb. 22nd, 1921, and the urine became sugar-free after three days' fasting. The diet was then gradually increased until by March 17th the patient was taking 83 g. of carbohydrate, 44 g. of protein, and 76 g. of fat, totalling 1200 calories. She was then transferred to the surgical ward for operation. Under intratracheal ether followed by intratracheal gas and oxygen anæsthesia, hypophysectomy was performed by Mr. Walton on March 19th, and a large soft pituitary tumour removed by the frontal route. Following operation the patient was desperately ill, with rapid pulse and shallow rapid respirations. She, however, gradually improved and made a slow but steady recovery. No symptoms suggesting coma occurred at any time and, in spite of the prolonged anæsthesia, the urine on the day following operation contained only a trace of sugar. Three days after operation the patient was put on a light diet containing milk, eggs, fish, bread, and potatoes; the urine remained free of sugar. On April 8th the blood-sugar was 0·15 per cent. The patient was discharged on April 19th, with instructions to avoid carbohydrate excess and to carry out frequent examinations of the urine for sugar. Prof. Turnbull's report on the tissue removed at operation will be found in an appendix to this paper.

The patient was next seen on July 8th, 1921. Her general condition was much improved; her headache much less severe, and her eyesight very much better. She said that she had been adding no sugar to her food at table but otherwise had followed an ordinary diet. The urine had been examined once or twice a week, sugar had never been detected. Her blood-sugar was 0·12 per cent.

Readmission to Hospital.—In May, 1922, the patient was readmitted. Her general condition was excellent, but she still complained of a gnawing sensation in the right side of the tongue, a burning sensation in the inner canthus of the right eye, a throbbing, stabbing pain in the right temporal region, and a dull, aching pain in the right sub-occipital region. She also complained of nasal obstruction. The patient had continued to take any food she fancied, but had not added sugar; she had continued the periodic examination of the urine but had never detected glycosuria. The blood-sugar on May 5th was 0·13 per cent. A submucous resection of the septum was performed, with removal of part of the right middle turbinate.

She was again admitted to hospital on Jan. 3rd, 1923. For some months she had referred the pains in the head to a lump in the right side of the neck, where a rounded swelling, suggesting a gland, could be felt deep in the right anterior triangle. There was no glycosuria; the blood-sugar was 0·15 per cent. On Jan. 4th Mr. Walton operated and discovered a rounded tumour $\frac{1}{2}$ in. by $\frac{3}{4}$ in. lying at the base of the carotid artery, deep to both internal and external branches and firmly attached to the artery. With some difficulty it was freed from the artery and surrounding tissue and removed entire. After removal it formed a pinkish-white rounded tumour of the consistency of a lymphatic gland and was, apparently, completely encapsulated. The patient made an uneventful recovery and was discharged from hospital on Jan. 17th. The report on the excised tissue, which proved to be a mixed neuroblastoma and embryonic neuroma of the carotid body, will be found in the appendix.

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* A detailed description of this patient will be found in the report of the surgical aspects of the case by Mr. A. J. Walton, The Lancet, 1921, i., 1168.

On August 10th, 1923, the patient again reported for examination. She still complained of pain in the head and neck deep in "at the root of the tongue." Her general condition was excellent. The urine was free from sugar, but a sugar tolerance test showed the following definitely diminished carbohydrate tolerance: Blood-sugar before glucose, 0·14 per cent.; blood-sugar ¾ hour after 50 g. glucose, 0·27 per cent.; blood-sugar 2 hours after 50 g. glucose, 0·22 per cent.

At the time of writing, three years after the operation, the patient's condition is unchanged. She still complains of pain in the head and neck and has recently suffered from photophobia. Careful examination has failed to reveal any evidence of extension of the growth into the sphenoidal sinus or alteration in her physical state. It is clear that she is emotionally unstable and, to some extent, the victim of an unwise and excessive sympathy in her domestic circle. The urine is free from sugar, but there is some hyperglycæmia. A sugar tolerance test has shown results practically identical with those of the previous examination, a definitely diminished carbohydrate tolerance: Blood-sugar before glucose, 0·18 per cent.; blood-sugar ¾ hour after 50 g. glucose, 0·22 per cent.; blood-sugar 2 hours after 50 g. glucose, 0·23 per cent.

The glycosuria of acromegaly is usually small in amount and a cause more of curiosity than alarm. As will be seen by the case here reported, it may, however, attain the proportions of a true diabetes, and in the literature can be found reports of cases showing all the symptoms and complications of that disease. Observations on the blood-sugar in patients with acromegaly are difficult to find; in our patient a marked hyperglycæmia was present, the blood-sugar on admission being 0·43 per cent. Though ketonuria is stated to be rare in acromegaly, Froment[1] has been able to collect a dozen instances in the literature, in which death from typical diabetic coma has ensued. In our patient a well-marked ketonuria was present, the acetone bodies in the urine measuring 0·2 per cent.; no symptoms of ketosis were present; the plasma bicarbonate was 66. It is generally stated, perhaps on somewhat meagre evidence, that the glycosuria of acromegaly is singularly insusceptible to changes in diet; in our patient no support for this statement was found, the urine became sugar-free on fasting as rapidly as would be expected in a true diabetes of equal severity.

Various Theories Examined.

The severity of the diabetes in this patient and its relief following hypophysectomy stimulate a consideration of the nature of the disturbance of carbohydrate metabolism existing in acromegaly, and of the rôle of the pituitary body in its production. The recognition of the frequent association of acromegaly and glycosuria dates from a paper by Hanseman in 1897. Hanseman[2] analysed the reports of 97 cases of acromegaly, and called attention to the occurrence of glycosuria in 12. Hinsdale[3] in the following year reported 14 instances of glycosuria in 130 acromegalics, while Borchardt[4] in 1908 stated that analysis of the collected reports of 176 cases showed glycosuria in 63, and the presence of "alimentary glycosuria" in a further eight. Later studies, while not confirming the frequency of occurrence claimed by Borchardt, have established the common association of the two conditions. The demonstration by Goetsch, Cushing, and Jacobson[5] of the occurrence of glycosuria following handling and electrical stimulation of the pituitary body, and of the increased carbohydrate tolerance in animals after hypophysectomy demonstrated the influence of the gland on carbohydrate metabolism and supported the theory developed from clinical observations, that both acromegaly and glycosuria resulted from over-activity of the hypophysis.

The more recent investigations of Camus and Roussy,[6] of Aschner,[7] and of Bailey and Bremer,[8] have thrown some doubts on the correctness of this hypothesis. These observers produced destructive lesions of the nervous system in the region of the floor of the third ventricle. Care was taken to avoid injury to the hypophysis. They claim to have produced in this way, in animals, glycosuria, a polyuria simulating diabetes insipidus in man, and a condition of fat accumulation with an accompanying loss of secondary sexual characteristics, similar to dystrophia adiposo-genitalis. Camus and Roussy are of the opinion that these conditions, glycosuria, diabetes insipidus, and dystrophia adiposo-genitalis, are due not to disturbance of pituitary secretion, as has generally been contended, but to mechanical pressure on, or injury of, nervous centres in the base of the brain. Without minimising the importance of these observations, it can be stated that, as regards the origin of glycosuria, the evidence presented in support of this view is meagre. In none of the experiments, whatever the operative measure employed, was glycosuria, of a more than transitory character, set up, and nothing resembling the prolonged and severe glycosuria, seen in our patient, was ever produced. That there exist centres in the base of the brain which, when stimulated, lead by action through the sympathetic to increased breaking down of glycogen, and thereby transient hyperglycæmia and glycosuria, cannot be doubted. There is, however, little experimental evidence to suggest that a permanent diabetes can be produced in this way.

The clinical evidence is also against the hypothesis. If mere mechanical pressure on centres in the floor of the third ventricle were the factor responsible for glycosuria in acromegaly, then all tumours capable of exerting such pressure should equally produce it. There is much evidence to show that this does not occur. Thus Borchardt[4] states that in reviewing the entire medical literature from 1886 to 1908 he was unable to find a single case of hypophyseal tumour accompanied by glycosuria, unless acromegaly was also present. Froment[1] in a recent communication confirms this and states that in later literature he, likewise, has been unable to find examples of glycosuria in hypophyseal tumours unassociated with acromegaly. On the other hand, Anders and Jameson[4] have collected a number of instances of lesions of the pituitary body with glycosuria and without acromegaly. A careful analysis of these cases shows, however, that in the majority the glycosuria was transient or terminal, and associated with either marked intracranial pressure or injury to the base of the brain. Only one case in the series, that recorded by Sainton and Rol,[10] is really free from objection, and is insufficient to refute the claim of an essential relation between acromegaly and glycosuria. A stronger argument against the theory of a mechanical origin of the glycosuria than its association with acromegaly and its absence in other hypophyseal tumours is the fact that juxta-hypophyseal extra-sellar tumours and inflammatory exudates, though obviously most favourably placed for exerting pressure on the area of the brain in question, rarely lead to glycosuria.

A Possible Explanation.

It appears, therefore, that the available evidence is against pressure on nerve centres as the cause of glycosuria in acromegaly, and that the theory that these disturbances of metabolism are due to a disordered secretion of the pituitary body offers the most plausible explanation. The relatively satisfactory carbohydrate metabolism following removal of the hypophysis, in the case described above, suggests that in this patient the glycosuria was not due to pancreatic deficiency. How, then, can it be explained? A possible explanation is suggested by the experimental observations of Burn, and of Olmsted and Logan. Burn[11] has shown that in rabbits pituitrin markedly modifies the action of insulin, diminishing, or even preventing, the marked fall of blood-sugar which normally follows an injection of insulin in the fasting rabbit. In rabbits rendered hypoglycæmic by insulin, a rise in blood-sugar followed the subcutaneous injection of pituitrin, comparable to that resulting from the administration of glucose. Burn showed, moreover, that this effect of pituitrin was not due to an increased breaking down of glycogen, as occurs when adrenalin is injected, but was apparently an action directly antagonistic to insulin. The results of Olmsted and Logan[12] also support this idea of an antagonistic effect of the hypophysis on the action of insulin. Their experiments are very suggestive, but a careful analysis of their protocols emphasises the highly artificial conditions under which they were made, and reveals the short duration of their observations on the effect of insulin in decerebrate cats with hypophysis intact. Further observations on this interesting apparent antagonism between pituitrin and insulin are obviously desirable, for it would seem to offer a possible explanation of the glycosuria of acromegaly.

In the appendix to this paper Prof. Turnbull suggests that the pars intermedia was the site of tumour formation in all of the ten cases of tumour of the glandular portion of the pituitary he has studied. In the past an over-activity of the anterior lobe has been held responsible for the development of acromegaly, but if Prof. Turnbull's view is a correct one, an over-activity of the pars intermedia would appear the more probable explanation. Such a hypothesis is in keeping with the idea we have suggested, that the cause of glycosuria in acromegaly is an inhibition of insulin action by increased pituitary activity, for pituitrin, though usually considered an extract of posterior lobe, is really an extract also of pars intermedia, no separation of these two structures being attempted, or indeed possible, in the commercial preparation of the extract.

There is, then, a considerable amount of evidence associating glycosuria with glandular overgrowth and over-activity of the hypophysis, and some evidence of an antagonistic relation between this gland and its product and insulin. This leads to the attractive hypothesis that glycosuria in acromegaly is due to an inhibition of normal insulin effect by excess pituitary activity. An attractive hypothesis is, however, always a source of danger to the unwary, the ground we are treading is highly contentious, and the whole subject of the pituitary body and its function is still wrapped in uncertainty.

Summary.

A case of glycosuria in an acromegalic patient shows the following points of special interest: (1) Severe hyperglycæmia, the blood-sugar on admission being 0·43 per cent.; (2) the successful accomplishment, after adequate dieting, of a major operation of prolonged nature, and the occurrence of only transient post-operative glycosuria; (3) the disappearance of glycosuria and hyperglycæmia following hypophysectomy and, although diminished carbohydrate tolerance is still present, the absence of glycosuria three years after the operation; (4) histological evidence suggesting the origin of the tumour in the pars intermedia; (5) the occurrence of a tumour of the carotid body.

The suggestion is advanced that the glycosuria of acromegaly is due to an increased activity of the hypophysis, probably the pars intermedia, with a resulting interference with the normal action of insulin on carbohydrate metabolism.

APPENDIX.

Pathological Reports by Prof. TURNBULL.

1. *Pituitary Tumour.*

The specimen (S.D., 460, 1921) was received on March 21st, 1921, and consisted of several small fragments of very friable tissue, mixed with red clot, in formaldehyde solution. The largest fragment measured 1 cm. in diameter, and consisted of pin-head granules of grey tissue mixed with blood. Another consisted of a membrane of yellowish-grey tissue with one slightly granular surface. The remainder appeared to be small portions of clot.

Microscopic Examination.—The two larger portions and some of the smaller were embedded in paraffin, and sections were stained in Ehrlich's hæmatoxylin with eosin, Weigert's iron-hæmatoxylin with van Gieson's mixture, the Unna-Pappenheim stain, Jenner's stain, and the Weigert-Gram stain with neutral red. In the largest fragment small areas in which spheroidal epithelial cells are packed round capillaries are separated by similar but dissociated epithelial cells mixed with red corpuscles. In the fragments which resembled clot a few small groups of similar epithelial cells lie among red corpuscles. The membrane is curved. Its convex surface is smooth; the concave surface is ragged, and upon it are some groups of epithelial cells similar to those in the other fragments. The membrane consists of a dense fibrous tissue, which encloses narrow acini. The long axes of the acini are parallel to the outer surfaces of the membrane. They contain a variety of cells such as are found in the anterior lobe of the normal pituitary body. The main part of the tumour is extensively disintegrated by hæmorrhage, but evidently consisted originally of a solid mass of epithelial cells traversed by capillaries. The membrane corresponds to a cap of compressed anterior lobe, such as we have found upon similar tumours removed entire at necropsy.

The spheroidal cells in the large fragment and in the portions of clot measure from 7 to 11 μ in diameter, the usual size being 8 μ. The nuclei are round, ovoid, or, less commonly, ovoid and curved. In cells measuring 8 μ in diameter they measure 6 μ. Most of the cells appear to be degenerate, the nuclei usually being excentric, whilst the cytoplasm has a ballooned appearance, being stained deeply towards the periphery alone. The nuclei resemble in structure those of epithelial cells in the normal pituitary body. The cytoplasm is distinctly basophil in sections stained with the Unna-Pappenheim stain, and is faintly basophil in Jenner's stain, but in sections stained with hæmatoxylin and eosin and differentiated for long periods in tap water, it has a greater affinity for the eosin than hæmatoxylin. The cytoplasm does not contain granules with an affinity for Gram's stain. Among these cells are a very few giant examples, which measure about 17 μ in diameter and contain three or four relatively small oval nuclei.

Some groups of similar spheroidal cells are present upon the concave or inner surface of the cap of compressed anterior lobe. Some of these groups are continuous with cells in acini within the cap. The majority of the cells within the acini are polygonal, and are larger, measuring from 9 μ to 14 μ in mean diameter. There are a few giant examples; for instance, a spherical, eosinophil cell measuring 40 μ in diameter and containing 14 nuclei. The cells are almost all chromophil cells containing granules with an affinity for Gram's stain; the eosinophil type is in great excess of the cyanophil.

Summary and Interpretation.—The pituitary tumour consists of epithelial cells, and has arisen either in the pars intermedia or in the posterior portion of the anterior lobe, a cap of compressed anterior lobe being present. Histologically the tumour is benign, the cells being very uniform and typical in appearance. The cells are very like the small, basophil, chromophobe cells of the gland, but the cytoplasm appears to be stained more readily and to be less distinctly basophil. A definite acinar arrangement is not present, the cells forming a continuous mass traversed by capillaries. The tumour cannot, therefore, be regarded as a "hypertrophy," if this term be defined as "an increase in magnitude without alteration in histological structure." "Adenoma" would appear to be the most appropriate designation. But I have obtained at necropsy a histologically similar tumour, capped anteriorly by anterior lobe, in which the spheroidal cells infiltrated not only the meninges but the substance of the brain. In the absence, therefore, of evidence concerning the histological relations of the margins of the tumour to adjacent tissues, "carcinoma" cannot be excluded. The capsule of compressed anterior lobe shows that the tumour arose either in the posterior part of the anterior lobe or in the pars intermedia. Since the year 1911 nine other tumours of the glandular portion of the pituitary body have been examined microscopically in the Pathological Institute of the London Hospital; one was associated with typical acromegaly, whilst four others were accompanied by structural changes possibly acromegalic in nature. Four of these nine tumours were removed at necropsy, and in all four a cap of anterior lobe was present; five were removed by operation, and in three a cap of anterior lobe was found. In one of those in which no anterior lobe was found the sella turcica was purposely not cleaned out completely at operation; from the other very little tissue was sent for histological examination. The constancy with which these tumours were enveloped in front by a demilune of anterior lobe, often of large size, suggests that the pars intermedia was the site of origin. If the tumours had arisen within the anterior lobe, it is unlikely that they would all have occupied the same position. Additional evidence of origin in the pars intermedia was afforded by the absence of any normal remnant of that part of the gland and, in some tumours, by the occurrence of columnar cells or by the arrangement of the cells in long narrow processes.

2. *Tumour of Intercarotid Body.*

The specimen (S.D., 37, 1923) was received in formaldehyde solution on Jan. 5th, 1923. It was an oval mass of moderately firm consistence, and measured 2·6 × 1·8 × 1·5 cm. It was covered with a delicate membrane of white fibrous tissue, to which were attached many fibrous tags. The cut surface was yellowish-brown, and showed many pin-head and smaller rounded areas separated by narrow clefts. The mass was bisected along the long axis, and one half was embedded in paraffin.

Microscopic Examination.—The mass is composed of numerous, more or less round areas, in which a cellular centre is surrounded by a delicate fibrillar or, rarely, a dense fibrous tissue. Groups of these areas are separated by capillaries, or, more often, by wide capillary spaces. In the cellular centres of these areas the limits of individual cells can generally be distinguished. Such cells are usually spheroidal or polygonal. They measure in mean diameter from 6 to 13 μ, and their nuclei from 4 to 6·5 μ. The cytoplasm is homogeneous or very finely vacuolated. The nuclei have usually one diameter slightly longer than the other. They have a deeply stained, narrow membrane and a close network of delicate fibrils of chromatin, on which are many nodes; they contain one or two nucleoli. The nuclei of the smaller cells are more deeply stained. Sometimes the central cells are of spindle shape and greatly elongated, whilst their nuclei are of narrow, oval shape; in places the cells appear to be replaced by long cytoplasmic cords containing nuclei at intervals. The number of spindle cells does not appear sufficient to permit the majority of the spheroidal and polygonal forms being regarded as cross sections of spindles.

The fibrillar tissue in the periphery of the areas resembles glia closely. It contains a very few oval nuclei, round which cell bodies are seldom recognisable. The zone of fibrillar tissue is sometimes very narrow, and in a few spots is absent, so that the free central cells are separated from capillary spaces only by a layer of endothelial cells. Usually it is of considerable width. The differentiation between the central cells and the peripheral fibrillar tissue is often sharp, though processes from the cytoplasm of the most peripheral cells usually blend with the fibrils. On the other hand, very few of the central cells may be clearly differentiated, but almost the whole area may be occupied by cells intermingled and merged with glia-like fibrils. The denser fibrous tissue consists of collagenous fibres which are stained red by van Gieson's mixture. It contains long, narrow spindle cells, with narrow oval nuclei. It merges with the adjacent fibrillar tissue. This denser fibrous tissue is relatively rare. Definite nerve-fibres surrounded by a collagenous sheath are not recognisable.

The mass is surrounded by a capsule of dense fibrous tissue. But this capsule is not sharply differentiated; numerous chains of cells and fibrils pass into it, lying as a rule about vessels. These chains often consist of very long, narrow cells lying parallel to one another. Some of the chains appear to consist of parallel, multinucleate cytoplasmic fibres, but this structure cannot be recognised with certainty. The capsule contains also a few sharply defined bundles of nerve of normal appearance.

Summary and Interpretation.—The structure of the tumour resembles that of the normal intercarotid body closely, except that a glia-like tissue replaces the definite nerve-fibres of the normal structure. Owing to the omission of a suitable fixative it is, unfortunately, impossible to determine how many, if any, of the central, free cells are chromaffin cells. Their cytoplasm appears to be less liable to distortion by formaldehyde than that of chromaffin cells. Many of the cells are of elongated, spindle shape and resemble cells differentiating to form nerves. In places multinuclear cytoplasmic fibres appear to have been formed, though the presence of such fibres cannot be established definitely. Further, the glia-like tissue is similar to that seen in embryonic portions of tumours of nerve-fibres. The free spheroidal and polygonal cells may only represent the least differentiated stage of a tumour of nerve-fibres. The tumour is a neoplasm formed by neuroblasts. Many of these are certainly differentiating towards nerve-fibres; to what extent they are differentiating into chromaffin cells cannot be determined. These features indicate that the tumour is of the nature of a neoplasm. It is not a hyperplasia of chromaffin cells. It can be called a "mixed hypertrophy of the intercarotid body due to a simple neuroblastoma and embryonic neuroma."

(*Continued at foot of next column.*)

HÆMORRHAGIC DISEASE OF THE NEW-BORN.

WITH REPORTS OF SIX CASES.

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MEDICAL publications have recently contained frequent references to the so-called hæmorrhagic disease of the new-born; and there have been numerous records of cases in which the cure of the disease has been ascribed to the injection of whole blood. In this communication an attempt has been made to present the important points encountered in a review of the available recent literature; and six cases, all of which occurred in the Liverpool Maternity Hospital during the past year, are recorded.

The dominant symptom of this disease is hæmorrhage, either internal or external, which begins most often between the second and fifth days after birth, and rarely lasts more than five days. Examples of hæmophilia, and of symptomatic neonatal hæmorrhage, due to causes such as syphilis, sepsis, icterus, enteritis, asphyxia and birth-trauma, are not properly included in a discussion of this syndrome.

Important Clinical Features.

Reference need be made only to those clinical features which are most important. Bleeding may be external or internal; the former may take place from the nose, mouth, vagina, urethra, bowel, or umbilicus. Melæna with, or without, hæmatemesis is the most frequent form. The blood is usually quite fluid, but occasionally clots are seen. They were noted in two of my cases. Anæmia is rapid; approximately one may assume that the loss of 1 oz. of blood by an 8 lb. baby corresponds to the loss of 1 pint of blood by an adult. Pyrexia is frequently noted (Charts 1 and 2); it is transitory, and is probably nutritional in origin—a view to which the careful charts given in Welch's[15] paper lend support. Anorexia and drowsiness occur when bleeding is severe; in milder cases the child takes the breast normally. There is rapid loss in weight, with only slow return to normal when the child recovers. In suspected cases presenting unusual signs and symptoms the possibility of internal hæmorrhage must be remembered.

Some observers, including Holt,[7] believe that the illness is self-limited, and that the natural tendency and course of many cases is towards cure. But the value of appropriate treatment is evidenced by the fact that before the introduction of treatment by blood-injection the mortality rate was 50 per cent. to 60 per cent.; while recent reports suggest that the present death-rate is about 10 per cent. to 20 per cent.; in several short series of observations it has been under 10 per cent.

(*Continued from previous column.*)

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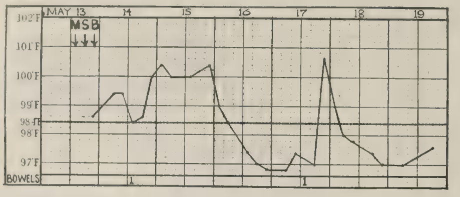
Ætiology and Pathology.

The ætiology and pathology of this disease present many difficulties, and it must be admitted that our knowledge is still very incomplete. Those who have looked for a gross pathological cause have pointed to the fact that on numerous occasions ulcers have been found in the gastro-intestinal canal, and especially in the first part of the duodenum. It is probable, however, that ulceration occurs in less than 50 per cent. of all examples of the hæmorrhagic disease ; a majority of the cases show only hyperæmia, congestion, and punctiform hæmorrhages of the gastro-intestinal mucous membrane. Occasionally small superficial erosions are seen. It is said that round-cell proliferation occurs in the submucosa.

During recent years attention has been deflected from the gross pathology of the mother and child, and has been centred upon the complex subject of blood-coagulation in infancy ; and it is now generally accepted that the fundamental cause of the hæmorrhagic disease of the new-born is to be found in a fault in the chemistry of the blood. My own observations are incomplete in this respect, for in my cases the blood was not specially studied. Rodda[13] has shown that in the normal infant there is a prolongation of the coagulation-time and bleeding-time from the first to the fifth days of life, and that after the fifth day there is a gradual return to the normal, which is reached on the tenth day. It may be that in the cases of hæmorrhagic disease there is an exaggeration of this normal feature ; for Rodda (loc. cit.) noted that hæmorrhage occurred when an abnormally prolonged bleeding-time accompanied an abnormally prolonged coagulation-time. But Rodda (loc. cit.) and Lucas and his associates[11] noted that prolongation of coagulation-time, when accompanied by a bleeding-time of normal duration, may exist without the onset of hæmorrhage. It is probable, therefore, that at least two types of hæmorrhagic disease occur in neonatal life :—

CHART 1.



Temperature chart of case of melæna neonatorum, born May 12th, 1923. Female, weighing 7 lb. 14 oz. at birth.
M = melæna began. S = 10 c.cm. horse serum intramuscularly. B = 10 c.cm. maternal blood, intramuscularly and subcutaneously.

(1) In this class there is a prolongation of coagulation-time, which may be due to excess of antithrombin, but is more probably ascribable, in accordance with the findings of Gelston[5] and Whipple[16] to deficiency of prothrombin. This deficiency is believed to be produced by a qualitative blood-platelet defect.

(2) In this class there is a prolongation of bleeding-time. In these cases a clot is formed, but it does not adhere to the edges of the breach in the vessel wall. Perhaps one might say with greater accuracy, that although clotting occurs in the main wound, thrombosis in the fine vessels adjacent to the wound is absent. Examples of this type have been variously ascribed to deficiency or defectiveness of prothrombin, of blood-platelets, and of thrombokinase.

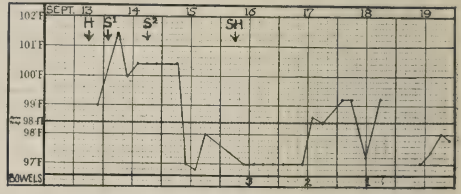
Influences of a more general nature have been regarded from time to time as possible causes of the hæmorrhagic disease ; but it is unlikely that the age of the mother, her obstetrical history, the intra-uterine age of the child, the character of the labour, the sex of the infant, or the use of anæsthetics during labour have any bearing upon the condition under discussion.

Treatment.

The best treatment is to administer whole blood to the infant. No matter whether we consider the disease to be due to deficiency of prothrombin, or of platelets, or of fibrinogen, or of thrombokinase, whole blood will supply the deficiency. If we accept Howell's[8] theory of blood coagulation, and believe that the hæmorrhagic disease is caused by excess of antithrombin, it is probable that the injection of whole blood will neutralise this antibody. Furthermore, whole blood probably stimulates the neonatal tissues to produce the substance which was previously deficient or absent ; and it certainly helps to make good the loss of fluid by hæmorrhage.

Unless the bleeding is very severe at its onset one is justified in giving whole blood by the subcutaneous or by the intramuscular route at first. The dose to be administered will depend upon the findings at clinical examination ; in a case of average severity it is probably wise to begin by injecting 20 c.cm. of blood (either citrated or not), obtained from the father, mother, or other donor by puncture of one of the antecubital veins. If hæmorrhage does not cease within two hours the injection should be repeated.

CHART 2.



Temperature chart of case of hæmatemesis neonatorum, born Sept. 11th, 1923. Male, weighing 7 lb. 14 oz. at birth.
H = hæmatemesis began. S^1 = 10 c.cm. horse serum subcutaneously. S^2 = ½ drachm orally. SH = slight hæmatemesis.

When the infant fails to improve speedily with this treatment, no time should be lost in resorting to intravenous transfusions, for, as Holt (loc. cit.) has emphasised, the fatal cases rarely survive more than three days, and often less than one.

Two important points must now be considered : First, whether blood-grouping is necessary ; and, secondly, the choice of vein into which the injection is to be made. With regard to the former, there is evidence in the important papers of F. B. Chavasse,[2] W. M. Happ,[6] and B. B. Jones,[9] that the blood-group is frequently established in early infancy, and that the mother and her infant may belong to incompatible groups. These findings imply that transfusion without preliminary grouping is an unjustifiable procedure. Biasi,[1] however, has recently shown by "typing" the bloods of 100 mothers and their children, and by cross-testing the bloods of mother and child against each other, that in no case were the maternal corpuscles agglutinated by the serum of the infant. He found this to be true even when the bloods of mother and child belonged to incompatible groups. Cherry and Langrock[3] in the course of somewhat similar investigations had obtained results parallel with those of Biasi. These findings confirm the experience of most clinicians, including Falls[4] and Pearce,[12] that preliminary "typing" of the blood is unnecessary.

The second important point is the selection of a suitable vein into which the injection may be made. If there is a fairly large external jugular vein, the operation should not present much difficulty. This route has been used with success by Falls (loc. cit.), Lapage,[10] and others. The superior longitudinal sinus is favoured by some. The head of the infant must be held firmly by assistants, and the needle introduced as far posteriorly as possible in the anterior fontanelle, to a depth of about three-eighths of an inch. It is a route which may be dangerous, but ill-effects are unlikely if the operator remembers that when the point of the needle is in the sinus the transfused blood should flow with the very slightest pressure on the syringe piston. Sidbury[14] recommends injection into the umbilical vein if the infant is not more than four days old.

In all cases the blood should be citrated (using 10 c.cm. of 3 per cent. sodium citrate solution to 100 c.cm. of blood), and should be injected at body temperature. The volume injected should depend upon the clinical condition of the infant. Cherry and Langrock (loc. cit.) state that 60 to 75 c.cm. of blood are approximately sufficient to supply the infant with the necessary substances to promote clotting and to replace the cellular elements lost by hæmorrhage. Others have used even larger doses; but it is probable that the coagulation defect in the child can be remedied by much smaller injections. Horse serum and human serum have been used, and have frequently proved efficacious; but they must be fresh, because thrombin is fairly rapidly transformed to inert metathrombin. It is obvious that serum treatment cannot supply fibrinogen; it will be useless in cases due to deficiency of this substance.

It is unnecessary to emphasise the importance of employing any surgical treatment which may be indicated for the control of hæmorrhage, for instance, from a bleeding umbilical vessel. Shock caused by severe blood loss may require intravenous or subcutaneous injections of normal saline solution. Rectal injections of 5 per cent. glucose solution have also been used for this purpose.

Case Notes.

The brief notes of my own cases are as follows:—

CASE 1.—Mother aged 28. One previous pregnancy, ending in miscarriage. Duration of present pregnancy: $39\frac{4}{7}$ weeks. Induction of labour on account of disproportion. Normal vertex delivery in the right occipito-anterior position. Duration of labour: $13\frac{3}{4}$ hours.

Infant: Female. Weight: 7 lb. 14 oz. Onset of melæna $26\frac{1}{4}$ hours after birth. Severe hæmorrhage, with pallor, yawning, and dry mouth. Weight fell to 7 lb. 5 oz. on the fifth day; increase began on the eighth day. Uneventful recovery. (See Chart 1.)

Treatment.—(1) Horse serum, 10 c.cm., intramuscularly; (2) maternal blood (citrated), 10 c.cm., intramuscularly and subcutaneously. An attempt to inject maternal blood into the superior longitudinal sinus was unsuccessful.

After-history.—The infant is now 7 months old. Weight: 18 lb. She is still pale, but otherwise normal.

CASE 2.—Mother aged 22. One previous pregnancy, ending in miscarriage. Duration of present pregnancy: 36 weeks. The mother suffered with albuminuria, œdema, and headaches during the pregnancy. Labour: normal vertex delivery in the left occipito-anterior position. Slight post-partum hæmorrhage. Duration of labour: 33 hours.

Infant: Premature female child. Weight: 4 lb. 7 oz. Onset of umbilical hæmorrhage 120 hours after birth. Copious bleeding; pallor; yawning. Spasmodic spurting of blood from an umbilical artery. Formation of clots was noted. Umbilical cord separated on the eighth day. By the ninth day the weight had fallen to 3 lb. 14 oz., but the infant recovered in spite of an attack of enteritis.

Treatment.—(1) Cord-stump ligatured with catgut: adrenalin solution (1/1000), and tannic acid applied to umbilicus, which was covered with a well-secured pad; (2) maternal blood (oxalated), 2 c.cm., injected into superior longitudinal sinus; (3) maternal blood (oxalated), 18 c.cm., intramuscularly in two separate injections of 10 c.cm. and 8 c.cm. respectively.

After-history.—The infant is now 15 weeks old, and weighs 8 lb. 5 oz. She has a slight umbilical hernia, and is pale. Her general health is fairly satisfactory, but she is obviously of poor physique.

CASE 3.—Mother, aged 37, had had three previous normal labours. Duration of present pregnancy: 40 weeks. Induction of labour on account of disproportion. Normal vertex delivery in the left occipito-anterior position. Duration of labour: $2\frac{1}{6}$ hours. The mother was removed to an asylum suffering with puerperal insanity.

Infant: Male. Weight: 7 lb. 14 oz. Onset of melæna and hæmatemesis 43 hours after birth. Severe hæmorrhage of short duration. Weight fell to 6 lb. 5 oz. on the eighth day. Uneventful recovery. (See Chart 2.)

Treatment.—(1) Horse serum, 10 c.cm., intramuscularly; (2) horse serum, $\frac{1}{2}$ drachm, orally; (3) calcium lactate, 3 gr., every four hours for three days.

After-history.—The infant is now 13 weeks old and weighs 13 lb. Apart from slight pallor, the child is healthy.

CASE 4.—Mother aged 34. No previous pregnancies. Duration of present pregnancy: 40 weeks. Normal vertex delivery in the left occipito-anterior position. Duration of labour: 9 hours.

Infant: Female. Weight: 6 lb. 5 oz. Onset of hæmatemesis and melæna 24 hours after birth. Severe bleeding, with pallor and dryness of the mouth. Weight fell to 5 lb. 5 oz. on the fifth day; afterwards, steady gain. Uneventful recovery.

Treatment.—(1) Horse serum, 10 c.cm., intramuscularly in two separate injections of 5 c.cm. each; (2) maternal blood (citrated), 30 c.cm., intramuscularly in three separate injections of 10 c.cm. each; (3) liquor adrenalini (1/1000), 1 minim, orally every two hours for 48 hours.

After-history.—The child is now 2 months old. Weight: 8 lb. 13 oz. She is still pale, but is otherwise normal.

CASES 5 and 6.—Mother aged 38. Five previous normal labours. Duration of present pregnancy: $37\frac{4}{7}$ weeks. Albuminuria, vomiting, and œdema, probably due to chronic renal disease, occurred during the pregnancy. Labour: twin infants; both presented by the breech, and were delivered in the left sacro-anterior position. Duration of labour: $4\frac{1}{2}$ hours.

Infants.—CASE 5.—Premature female child. Weight: 5 lb. 4 oz. Onset of hæmatemesis and melæna $49\frac{3}{4}$ hours after birth. Bleeding of moderate degree. The infant became extremely feeble, and on the sixth day of life the respirations became laboured and rapid, and the child collapsed. The temperature rose to 100° F., and on the morning of the seventh day it was 101·8°. Though extremely emaciated and weak, the child gradually recovered. On the eighth day the weight was only 4 lb. 2 oz. The infant was too feeble to suck; breast-milk was expressed and given in a spoon. Sherry-whey was also used.

Treatment.—(1) Paternal blood (citrated), 46 c.cm., intramuscularly, in five separate injections of 4 c.cm., 12 c.cm., 10 c.cm., 10 c.cm., and 10 c.cm. respectively; (2) horse serum, 4 c.cm., intramuscularly; (3) maternal blood (citrated), $1\frac{1}{2}$ c.cm., intravenously (superior longitudinal sinus), $8\frac{1}{2}$ c.cm. intramuscularly; (4) liquor adrenalini (1/1000), 1 minim, two-hourly for 48 hours.

After-history.—The infant is now 6 weeks old. She is pale and feeble, and weighs only 5 lb. 14 oz. Progress fairly satisfactory.

CASE 6.—Premature female child. Weight: 5 lb. 2 oz. Onset of hæmatemesis and melæna $43\frac{1}{4}$ hours after birth. Very severe hæmorrhage, with collapse. The infant died 23 hours after the bleeding began. Mr. J. St. G. Wilson kindly performed the autopsy. He found small superficial erosions of the gastric mucous membrane; there were no definite ulcers in the gastro-intestinal tract. No spirochætes were found in sections of the liver, lungs, spleen, suprarenals, and kidneys.

Treatment.—(1) Horse serum, 5 c.cm., intramuscularly; (2) paternal blood (citrated), 30 c.cm., intramuscularly in three separate injections of 10 c.cm. each; (3) subcutaneous saline injections; total volume, 70 c.cm.

Comments.

There were no cases of hæmophilia in my short series. With one exception, the infants were females, and the family histories did not reveal any "bleeders." In no case was there any reason to believe that hæmorrhage was secondary to some gross underlying cause, for instance, syphilis or sepsis. The average age when hæmorrhage began was 51 hours. In Case 2 the maternal blood was prevented from clotting by the addition of the minimal amount of potassium oxalate necessary for this purpose. Although the quantity of oxalate employed was too small to cause any toxic effects, accidents might happen with this procedure. On the other hand, the citrate method is quite safe, and is equally efficacious. In Case 3 a small dose of horse serum and calcium lactate were both given orally; it is very doubtful, however, whether either of these treatments possess any value.

I wish to express my thanks to Miss M. H. F. Ivens and to Dr. J. H. Willett, honorary surgeons to the Liverpool Maternity Hospital, for permission to publish these cases.

(*Continued at foot of next page.*)

VITAMIN-A DEFICIENCY IN DENMARK AND ITS RESULTS.[*]

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Have we any reason to fear that our food is too poor in vitamins? Can one observe a deleterious influence on the health of the people which one could ascribe to under-feeding with vitamins? These are practical problems of the greatest importance which have emerged from the recent investigations on the physiology of nutrition.

In those countries where beri-beri and scurvy are common diseases the deficiency in vitamins and its effects are obvious. In those countries, however, we are dealing with a population which, as a rule, lives on such an extremely monotonous diet that the cause of the vitamin deficiency can be demonstrated without difficulty. It is more difficult to determine to what extent a deficiency in vitamins may affect the health of the community in those countries where the diet is more varied. The question has arisen whether such a deficiency may occur under normal conditions in the civilised nations of Europe and America.

This question has been repeatedly discussed during the last few years. Some writers have certainly exaggerated the importance of the possible vitamin deficiency to which they have attributed as an immediate cause a whole series of the most various diseases and conditions of debility. The opposite extreme has been the complete neglect of considering the possibility of a vitamin deficiency. It has been asserted that if only the diet is sufficiently varied and contains the necessary number of calories the supply of vitamin regulates itself.

On the whole, the discussion has not reached any definite result on account of the absence of definite facts. We do not know enough about the actual demand in vitamins by the human organism. Moreover, our knowledge of the amounts of the different vitamins in our articles of food is not sufficiently exact to establish a calculation of the proportion between vitamin requirements and vitamin supply. For the present one is therefore compelled to deduce the occurrence of vitamin deficiency from the occurrence of such diseases which can be caused by vitamin deficiency.

Xerophthalmia and its Cause.

The observation of the Danish ophthalmologist, Olaf Blegvad,[1] on the occurrence of this eye affection in Denmark has given us very important information on the vitamin economy in that country.

Xerophthalmia is an eye disease which occurs particularly in the children of about a year or less; occasionally it occurs also in adults. The disease is preceded as a rule by loss of weight of the child. The disease is essentially a general disturbance of nutrition; the eye affection is only a partial symptom which occurs rather late in the development of the disease. The cornea has a dried appearance, the conjunctiva and eyelids swell and are inflamed; in the later stages of the disease the cornea shows definite lesions which break through the latter and then the whole eyeball is filled with pus. If the disease runs through all these stages complete blindness is the result. In adults the disease is arrested as a rule in an early stage, which is characterised by a slight inflammation and dryness of the cornea. This early stage is also associated with a peculiar alteration in the power of vision of the patient—hemeralopia or night-blindness. The vision of the patient is normal during the day, but as soon as dusk begins his vision suddenly is very bad and only becomes normal again with daylight.

The symptoms which we have described are associated with a whole series of complications. A very characteristic feature is the slight resistance of the patient against infections of different kinds. For 165 cases collected by Blegvad, the following complications are recorded: Pneumonia, 63; bronchitis, 45; pyuria, 42; otitis media, 30; nasal catarrh, 26; subcutaneous abscesses, 4.

Xerophthalmia, or "dystrophia xerophthalmica," as the whole symptom-complex was called by Blegvad, is on the whole a relatively rare disease. During the 12 years 1909–1920 Blegvad has collected in the whole of Denmark 434 severe and 148 light cases. The disease is more common in Denmark than in any other country from which statistical data can be obtained. Only in Japan has the disease reached the same frequency as in Denmark; in Sweden it practically does not occur at all.

During the last decennium xerophthalmia in Denmark increased in frequency. In fact, it has become there one of the main causes of blindness in children. Formerly, venereal infection was the common cause. This has now been replaced by xerophthalmia. Now the same disease can be produced in animals experimentally, if one excludes the fat-soluble vitamin A from the food. Between the xerophthalmia of children and that of the experimental animals no difference can be established either clinically or anatomically, and the investigations of Blegvad prove conclusively that the xerophthalmia in man is caused by a deficiency in vitamin A. He shows that the food in the overwhelming number of cases of the disease in children was poor in vitamin A; that in those cases where the vitamin deficiency in the food could not be demonstrated, other conditions were present which would cause a deficient absorption of vitamin A by the organism; that the variations in the number of cases run parallel with the corresponding variation in the supply of vitamin A which was available for consumption to the people as a whole; and lastly, that the poorer the food was in vitamin A, the shorter was the period during which a child could live on that food before the disease set in.

Xerophthalmia is not the only Effect of the Deficiency in Vitamin A.

Everybody who has experimented with the effect of food poor in vitamin A or free from any vitamin A on rats must have observed that the general condition of the animals suffers long before the eye disease appears. In young animals the growth stops almost always, their fur gets rough, they easily show infections of various kinds. If the vitamin deficiency is not complete no eye disease appears at all, and only the general condition of the animal suffers. Adult females breed badly; if they become pregnant they show a great loss of weight, and often eat several or all of the new litter. They are not able to nourish

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[*] A paper read before the Physiological Society at Lund, Sweden.

[1] Om xerophthalmien og dens forekomst i Danmark i aarene 1901–1920, Dissertation, Copenhagen, 1923, Danish.

(*Continued from previous page.*)

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adequately their young, and the mortality among the latter is great.

As the result of the experience gained from these experiments on animals, it follows necessarily that there must be in a population in which xerophthalmia occurs a much larger number of cases in which the deficiency in vitamin A, without producing the eye disease, is the cause of a diminished resistance against infections, of general debility, and of malnutrition.

We shall see from the following that this expectation is fulfilled, and it is for this reason that we must ascribe to this relatively rare disease such an eminent importance. The cases of xerophthalmia are recorded and treated in hospitals where an abundant supply of vitamin A in the form of cod-liver oil and full milk as a rule produce a cure. These cases are the most obvious indication of the vitamin deficiency, but apart from these cases there are probably a whole army of patients whose diseases get other names: disturbances of nutrition, pneumonia, bronchitis, rachitis, and so on, and for whom it was really the deficient intake in vitamin A which was the cause of their succumbing to the diseases. The investigations of Blegvad have given us the first certain proof of the occurrence of an under-feeding in vitamin A on a very large scale. It is a proof which cannot be denied even by those who believe only in the power of the calories and doubt the importance of the vitamins for the health of the people.

The Cause for the Occurrence of Xerophthalmia in Denmark must be looked for in an Excessive Export of Butter.

One is naturally inclined to ask why the vitamin-A deficiency has shown itself more distinctly than in any other country, not affected by the war, in Denmark, which to us in Sweden, at any rate, has always appeared as a country "flowing with milk and honey." No country in the world has proportionately to its population such a highly developed dairy industry as Denmark. This has become the main industry of the country, and it is on it that the wealth of the country mainly depends. The dairy products butter, cream, and partly also cheese, are the foodstuffs richest in vitamin A, and when they are exported Denmark also exports its vitamin A. This has occurred to such an extent that the whole population of the country has suffered. This important relationship has not been considered in great detail by Blegvad in the paper referred to above. I should like, therefore, to throw more light on the significance of this export on the occurrence of xerophthalmia in Denmark on the basis of a few statistical data.

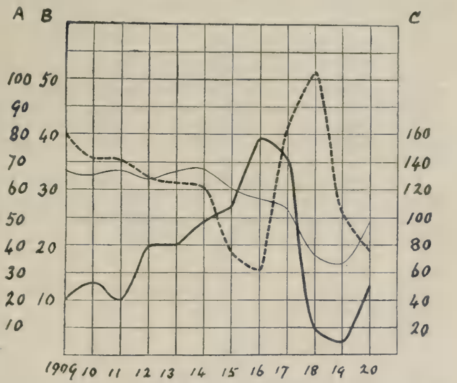
TABLE I.—*Relation Between the Milk Fat Consumption in Denmark and the Frequency of Xerophthalmia.*

Year.	Milk fat produced and imported.	Milk fat exported.	Milk fat consumption in the country.		Number of cases of xerophthalmia.
			Total mill. kg.	Per day and person.	
	Mill. kg.	Mill. kg.		g.	
1909	132·9	93·4	39·5	40·0	20
1910	130·1	94·6	35·5	35·6	26
1911	133·0	97·3	35·7	35·3	20
1912	128·7	95·6	33·1	32·3	40
1913	133·8	101·4	32·4	31·2	40
1914	133·2	101·3	31·9	30·4	48
1915	121·5	102·3	19·2	18·1	53
1916	113·8	97·4	16·4	15·3	78
1917	106·7	62·1	44·6	41·0	71
1918	71·9	15·2	56·7	51·5	9
1919	66·4	37·6	28·8	26·2	4
1920	98·8	77·4	21·4	18·9	25

In Table I. I have calculated from the number of cows and the average yield of milk the production in Denmark of milk fat, expressed in million kilogrammes of butter per annum. It has been assumed in this calculation that 26 kg. of milk yield 1 kg. of butter. For the years 1909–14 these figures have to be supplemented by the amount of milk imported into Denmark. After 1914 this import can be neglected in the calculation, since after that date it was practically stopped. These figures are given in the second column. In the third column is the export of milk fat from Denmark expressed in the same way. The export of cheese is here not calculated, as it is at present difficult to compare the vitamin content of cheese with that of butter. The figures for the export are therefore certainly too low.

In the fourth column of Table I. is given the difference between the figures of the two preceding columns—that is to say, the amount of milk fat consumed by the people in the country. In the second half of this column these figures have been calculated for the daily consumption per individual in grammes. The last column contains the cases of xerophthalmia as collected by Blegvad. The table is illustrated by Fig. 1. The thick line gives the cases of xerophthalmia, the thin line the production in milk fat, and the broken line the consumption per individual.

FIG. 1.



- - - - - Consumption of milk in grammes per day (Col. B).
▬▬ Cases of xerophthalmia (Col. A).
——— Production and import of milk fat in million kg. (Col. C).

It shows at once that the consumption of milk fat before the war and until 1916 inclusive has steadily declined so as to reach very low values in that last year. At the same time, the number of cases of xerophthalmia reached their maximum in that year—1916. Then there was a complete change. In the end of 1917, during 1918, and partly also during 1919 the export of butter was forbidden. In spite of the fact that the production of butter during that time decreased, much more milk fat was consumed in the country than in the years before the war. Xerophthalmia disappeared almostly completely, but reappeared in 1920 when the export of butter began again.

During the whole period Denmark has, therefore, suffered from its export of vitamin A, except during certain years of the war when the consumption reached 40–50 g. of milk fat per day and person.

The Vitamin Store in Sweden.

Since xerophthalmia is practically unknown in Sweden one must conclude, if the preceding deductions are correct, that the consumption in milk fat in Sweden is greater than in Denmark. This seems indeed to be the case. Statistical figures which have been collected for the consumption in articles of food in the poorer households during the years of the war 1914–18, show that the daily consumption during 1914 was on an average 52 g. of milk fat per member of the family, and during 1917, 53 g. The corresponding figures for Denmark are 30·4 g. and 41·0 g. per person. It must also be taken into consideration that the figures for Sweden refer only to the poorer families, while the figures for Denmark represent the average values for the whole population. In reality the difference is, therefore, much greater.

Two Additional Causes of the Vitamin Deficiency: Consumption in Margarine, and the Feeding of Cattle.

It is clear, therefore, that the export of butter from Denmark is really the immediate cause of the vitamin deficiency. The population naturally looks for a substitute for the butter; this substitute is margarine.

Dr. Blegvad makes here the following comments. Formerly all adult people in Denmark consumed rather large quantities of butter. During the last few years, however, butter has been replaced by the cheaper substitute—margarine, which is used especially by the economically less well situated population. At the beginning margarine was prepared from animal fat, which contains small amounts of vitamin A, but during the last years the animal margarine has been replaced more and more by vegetable margarine, since the latter can be manufactured more cheaply and tastes better than the animal margarine. The vegetable margarine contains only slight traces of vitamin. Even when margarine is mixed with a little milk, the content in vitamin A, as Halliburton and Drummond, and Drummond have shown, is quite inadequate.

Table II. and Fig. 2 show that the import of the raw materials for the vegetable margarine industry has increased enormously from 1909–16. During 1917–18 the import was insignificant, but increased again considerably during 1919 and 1920. If we compare the importation of vegetable fat with the consumption of milk fat, we find that the vitamin-containing milk fat is being replaced from year to year in increasing amounts by the vitamin-free vegetable fat, and this goes on progressively. Only the two years of the war—1917–18—make an exception, where the conditions were reversed and there also the obvious indication of the vitamin deficiency—the xerophthalmia—disappeared.

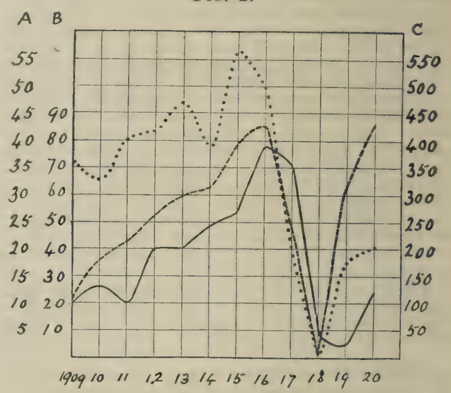
TABLE II.—*Proportion Between the Frequency of Xerophthalmia and the Import of Oil Cakes and Vegetable Fat.*

Year.	Oil cakes per cow.	Vegetable fat. Total imports.	Number of cases of xerophthalmia.	Year.	Oil cakes per cow.	Vegetable fat. Total imports.	Number of cases of xerophthalmia.
	kg.	mill. kg.			kg.	mill. kg.	
1909	367	10·4	20	1915	564	39·0	53
1910	329	17·4	26	1916	499	42·8	78
1911	403	20·8	20	1917	159	23·4	71
1912	419	25·7	40	1918	5	0·3	9
1913	479	29·7	40	1919	177	31·3	4
1914	391	30·7	48	1920	203	43·3	25

It must be taken into consideration that the vitamin content of the milk fat can vary too, and can thus influence the onset of xerophthalmia. Agriculture in Denmark is carried out according to modern principles. Stall-feeding or winter feeding has changed completely during the last few years. Formerly, the stall-feeding for cows consisted almost exclusively of hay and straw, while now one has gone over to turnips and oil cakes, which together with straw constitute the stall-feeding of cows. One knows that this feed is very poor in vitamin A, and one has been able to show that the vitamin-A content of butter and milk is considerably diminished as the result of this feeding. The table shows that the frequency of the xerophthalmia also follows the importation of oil cake. The extent of this importation is given in the second column of Table II.

This might possibly account for the fact that most of the cases of xerophthalmia occur during the months of January to May, while they are practically absent during June to December. During the first period the children receive milk fat which has been formed during the stall-feeding. During the second period green food constitutes a larger or smaller portion of the food of the cows. Blegvad has been able to show that in those years where the grass feeding begins soon the cases of xerophthalmia also disappear sooner in the summer.

FIG. 2.



- - - - - Import of vegetable fat in million kg. (Col. A).
▬▬▬ Cases of xerophthalmia (Col. B).
.... Oil cakes in kg. per cow and year (Col. C).

Xerophthalmia is Not the Only Result of Vitamin Deficiency in Denmark.

So far we have only dealt with the vitamin deficiency as it can be measured and studied clinically in man, taking as a criterion xerophthalmia. The results of animal experiments compel us to draw even more serious consequences. I have already mentioned that a diminution in the vitamin-A content of the food of the animals leads to xerophthalmia only in the most extreme cases. There is, in addition, the general effect: the diminished resistance against diseases, and the diminished vitality of the progeny.

Can a similar effect be demonstrated in Denmark?

The table of the consumption of milk fat shows that it was smallest during the years 1915 and 1916, and was greatest during the years 1917 and 1918, and partly also during 1919. We have, therefore, here an involuntary experiment on the importance of vitamins in which the whole population of Denmark was the test object. The harmful effects of the vitamin deficiency may be expected to manifest themselves by an increase in certain diseases during the years 1915–16, and as a late effect during 1917. Conversely, the increased consumption of vitamin A during 1917–18 and during the first half of 1919 should manifest its favourable effect by a diminution in the frequency of these diseases during 1918 and 1919.

In Table III. I have reproduced a preliminary extract from the statistical data on the causes of deaths in the town population of Denmark. I have there collected a number of diseases which are probably influenced by the deficiency in vitamin A. If we leave out the first three years we find that the infant mortality during the first year of life shows a great increase in the year 1916. It sinks in 1918 and reaches in 1919 the lowest value of the period. 1920 again shows a considerable increase. The year 1916 also shows the greatest mortality for children aged 1–5.

The vitality of the children is reflected in the number of cases in the column "Congenital debility." We see how the number of deaths from this cause gradually increases from 1914 to 1917 where the maximum for the period is reached; 1918 and 1919 show a diminution; 1920 again a considerable increase.

TABLE III.

Year.	Milk fat consumption in grammes per day and person.	Cases of death from—			
		All causes under 1 year of age.	Con-genital debility.	Rickets.	Tuber-culosis of the lungs.
1909	40·0	3136	696	32	1228
1910	35·6	3456	647	27	1190
1911	35·3	3191	653	34	1274
1912	32·3	2771	605	18	1331
1913	31·2	2830	673	20	1208
1914	30·4	2986	630	39	1267
1915	18·1	2625	694	27	1234
1916	15·3	3136	747	45	1492
1917	41·0	2835	771	24	1689
1918	51·5	2348	649	19	1307
1919	26·2	2549	608	23	1197
1920	18·9	3006	744	15	1204

It is well known that rickets is rarely a cause of death; rachitic children die, as a rule, from affections of the lung, and therefore these cases are usually entered in the column for lung diseases. The column for the mortality from rickets shows, however, that this reached its maximum in 1916. For adults, too, 1916 was a bad year. The mortality from tuberculosis of the lung showed for the town population during the years 1916 and 1917 a very considerable increase. Compared with 1914, the year 1917 shows an increase of over 30 per cent. After 1918 the mortality falls.

How to Deal with the Vitamin Deficiency.

It is clear that the conditions with which we have dealt represent a conflict between the economic and hygienic interests in Denmark. This has been revealed by the excellent work of Dr. Blegvad, and it is a problem which is not easy of solution. On the one hand, the great export of butter is bad for the health of the people; on the other, the economic well-being of the people depends on it. But vitamins and money go together. The well-to-do family can, by varying its food, provide itself with the necessary vitamins. They eat butter and drink milk: the less well-to-do people must be satisfied with substitutes poor in vitamins. Xerophthalmia occurs mainly amongst the poorer people. In view of this fact one can hardly expect that a diminution in the export of butter would be the solution. Perhaps the solution will have to be sought in making the cheaper substitutes for butter sufficiently rich in vitamins, but here, too, one meets with economic questions of considerable difficulty. The vitamin for the substitute must be cheaper than the vitamin of the milk fat if such a proceeding is to have any value. For the present, at any rate, the vitamin A of cod-liver oil is the cheapest. The amount of vitamin present in 350 tons (= 350,000 kg.) of cod-liver oil when consumed annually would certainly suffice to protect the whole population of Denmark against the dangers of a vitamin deficiency, and an importation of 600 tons would completely cover the vitamin export of the country.

How minute the amounts of the actual vitamin required are can be shown by the following calculation. The Norwegian pharmacologist, Poulsen, has prepared from cod-liver oil a substance which, when given daily in amounts of 0·004 mg. enables young rats to grow. An addition of 8 mg. per kilo. would be sufficient in order to give to margarine the vitamin content of butter, and a few bags of about 1200 kg. would be sufficient to contain the whole amount of vitamin exported from Denmark during one year. And still this preparation is by no means pure: perhaps its vitamin content is only a few per cent.

Clinical and Laboratory Notes.

TWO CASES OF SEMINAL VESICULITIS TREATED BY OPERATION.

BY HAROLD C. EDWARDS, M.B.LOND.,
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THE following are two recent cases of chronic seminal vesiculitis arising from infection of the urinary tract, and treated radically by a transvesical operation.

CASE 1.—The patient was a man aged 52 with a history of stricture. The first observation of urinary infection was made four years ago, when the patient had an attack of "influenza," and pus was discovered in the urine. The pyuria continued and the urine became thick at intervals. There was no disturbances of micturition. Last September the patient suffered an injury to the scrotum by falling across an iron fence. Dating from this time a swelling appeared in the left side of the scrotum which became larger and eventually burst, yielding a large quantity of pus.

Condition on Admission.—The patient was admitted to hospital on Nov. 24th, 1923. He had a discharging scrotal sinus. The prostate was normal in size and consistence. A large œdematous inflammatory mass occupied the position of the left seminal vesicle. The right vesicle was felt as a soft cushion. The patient suffered from periodic attacks of pyrexia, lasting usually 48 hours, with headache and profuse perspiration. The so-called "influenza" was probably an attack of this kind. The sinus in the scrotum was opened up and packed with iodoform gauze. A large quantity of pus was evacuated and the wound allowed to heal by granulation. Coliform organisms in pure culture were discovered in the pus.

The patient was discharged and readmitted on Jan. 22nd, 1924, when the radical operation described below was performed.

CASE 2.—The patient, aged 57, a very nervous type, had gonorrhœa 28 years ago, and had since had some difficulty in passing water. Two years ago he commenced to have periodical attacks of nocturnal incontinence, recurring at intervals of three weeks. On Feb. 22nd last year he had an attack of acute retention with strangury. The urine was thick. The acute condition subsided, but retention persisted, and the patient had to be catheterised twice daily. A few weeks later a suprapubic operation, in which a portion of the prostate was removed, was performed at another hospital. This partially relieved the obstruction but was insufficient, for the suprapubic wound did not close. It healed and broke down alternately for a period of nine months. The patient could not tolerate having a catheter tied in.

Condition on Admission.—The patient was admitted to hospital on Feb. 23rd, 1924. He had difficulty in micturition and a small stream. He passed water half-hourly in the daytime, but was incontinent while sleeping. The urea concentration was slightly subnormal (1·4 per cent.) and the blood-urea 37 mg. per 100 c.cm., without a urea meal—i.e., just within normal limits. The right lobe of the prostate was swollen and tender, and the right seminal vesicle formed a large film cylinder with a rough, uneven surface. The left lobe of the prostate was moderate in size, and the left seminal vesicle was not felt. The skin around the scar of the previous operation was red, œdematous, and tender, and urine leaked from a small sinus in the centre.

A New Technique.

In both cases the following transvesical radical operation was performed by Sir John Thomson-Walker. The technique of the operation varied only in detail.

The patient was catheterised and the bladder distended with normal saline. A mid-line subumbilical incision was made, and the bladder exposed and incised. The incision was extended and a bladder retractor put in position. An incision was made through the trigone and bladder base, extending from the posterior lip of the internal meatus to one and a half inches beyond the base of the trigone. This incision was continued round the internal meatus about a quarter of an inch from the orifice.

In Case 1 the seminal vesicles and the prostate were hard, indurated, and densely adherent. The vesicles and corresponding halves of the prostate were in turn dissected out with long rat-toothed forceps and curved scissors. A drainage-tube was stitched in the cavity left by removal of the vesicles and carried across the bladder to the suprapubic wound. A large drainage-tube was placed in the bladder, the anterior vesical wall closed by continuous suture, and the wound on the abdominal wall repaired. A catheter was tied in the urethra. The post-vesical drain was removed on the eighth day and the vesical tube on the ninth, together with the catheter. When the suprapubic wound was nearly healed a catheter was again tied in, and before removing the catheter it was plugged for an increasing period with a spigot. The patient was discharged from hospital on Feb. 26th, 35 days after the operation. The suprapubic wound was healed and normal micturition established. There was no residual urine. Pathological examination showed extensive inflammatory changes. No organism was cultivated from the vesicles.

In Case 2 the right vesicle was distended with pus. It was removed together with the prostate. The base of the bladder was closed by continuous catgut suture, and the postvesical area was not drained. Prevesical and vesical drains were inserted and the abdominal wound closed. A catheter was left in the urethra. The prevesical drain was removed on the fifth day and the vesical on the sixth, together with the catheter. A catheter was tied in while the suprapubic wound closed, and the bladder gradually distended. When the catheter was removed the patient passed water without difficulty. A No. 16 Lister's bougie was passed with ease. The patient was discharged 30 days after the operation. Pathological examination showed great increase of fibrous tissue and round-celled infiltration. The predominant organism cultivated from the pus was a coliform bacillus devoid of fermentative activity.

Comments on the Cases.

The common feature in these two cases was the presence of *B. coli* in pure culture as a cause of seminal vesiculitis. In the first case, the course was an abscess tracking to the surface and recurrent pyrexia from toxæmia, and, at the same time, symptoms of chronic cystitis. In the second case the symptoms were those of obstruction which had been mistaken for enlargement of the prostate. The transvesical method used by Sir John Thomson-Walker has the advantages over the perineal route that the approach is more direct; a full exposure is possible; there is no damage to the external sphincter (the compressor urethræ muscle) and therefore no danger of incontinence; there is no danger of urinary fistula, and none of damage to the rectum.

ON THE USE OF NON-INFLAMMABLE CELLULOSE SPLINTS WITHOUT PRELIMINARY PLASTER CASTS.

BY Z. P. FERNANDEZ, CH.B., M.D. LEEDS,
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THE decreasing mortality and crippling from bone and joint tuberculosis in children since the advent of conservative treatment with earlier diagnosis form a bright landmark in the oft-criticised tuberculosis campaign. In the case of adults there are many centres that still resort to the short cut by the knife, but the post-operative results in many of these cases are very disappointing, with return to work indefinitely put off.

I have published in THE LANCET [1] my experience of the fatal results of operated spinal cases admitted to our sanatorium. On the other hand, in spite of the adverse conditions of Leeds, our experience in following up adults treated on conservative lines with dispensary or domiciliary supervision has been very encouraging.

Rest is the key-note of the conservative method and splinting a natural corollary during the subacute or ambulatory period. Rollier condemns plaster splints for permanent use, but he freely employs celluloid splints in the ambulatory stage and in certain acute conditions. The disadvantages of plaster of Paris are well known. The preliminary plaster casts that are necessary in making celluloid splints and the time involved in drying led me to investigate a more easily applied substitute.

The use of cellulose acetate was suggested to me by the employment of cellulose dope or varnish for stiffening and weather-proofing aeroplane fabrics. I believe the dope has been used in artificial limb manufacture, but, as far as I am aware, not for splints. The cellulose acetate we use is quite different from celluloid, and is non-inflammable. We employ two solutions: Solution 26, which is thicker and more viscous, being used for the inner and outer coatings; and the thinner, solution 25, for the middle or additional coating. The finished splint has a glazed appearance, does not absorb moisture, and therefore well withstands perspiration.

Technique.

The part to be splinted is tightly covered with oil-silk or jaconette to prevent oozing and adhering of solution to the body. The different pieces may be stitched up and covered by an ordinarily worn under-garment, which may be made body-tight by a few stitches. Two or three Gigli's saw wires, 6 or 9 in. long, are then fixed by a coat of ordinary bandage in a straight line in a convenient anterior aspect. The ends of the saw wire must be left uncovered and loosely fixed to facilitate sawing out. About a pint or two of solution of cellulose acetate,[2] kept in a covered tin to prevent evaporation, and a good painting brush, 1½ in. wide, and ordinary bandages are got ready. It is advisable to work with gloved hands. For spine and lung splints a suspending posture is avoided by using the head and chin fixer made for me by Messrs. Reynolds and Branson. This permits lateral or vertical adjustment. If a standing posture is not possible the bandages are cut in pieces, and fixed by the cellulose solution. When dry, the patient is turned over, and the process completed. After a coat of the thicker solution is painted on to the layer of bandage fastening the saw (but avoiding the saw), two more layers of bandage followed by the cellulose thinner solution are put on. For the next three or four layers, crinoline or stiff material, such as used overalls, with a thick coat of cellulose will be sufficient. The splint may then be sawn out by an easy to-and-fro movement of the Gigli saw, having previously marked with ink the adjoining aspects of the splint to identify. The splint is removed from the body with the under-garment and oil-silk cut off by scissors. The two cut ends of the splint are stitched up at a few inches intervals, and three or four layers of bandage with three or four coatings of cellulose put on, ending with two final coats of thicker solution to give a glazed appearance. As a rule, the splint put on in the morning is ready to be cut out by the afternoon. For aeration the splint is perforated by a screw-driver. If expense is no concern, the edges may be leathered and hooks put on; otherwise braiding with thin pieces of bandage of the edges will answer the purpose, and strappings with buckles stitched on to fix the edges. A film preparation of cellulose acetate, known as "celastoid," will be found very convenient for the inner coat. This, cut in 4″ × 1′ size and warmed in tepid water, is easily moulded to the body-garment with the oil-silk and wire intervening. (Celastoid, with its high insulating property, could be of value in radiological work.) The next layers are completed with cellulose acetate on bandages. Though a little more expensive, celastoid gives a skin-like smoothness to the inner surface of the splint. The whole splint is made in a day at a very cheap cost, and is light, rigid, and pliable for adjustment.

These splints are of value in fractures and paralytic conditions, as they are conveniently put on without disturbing the patient. I hope that the technique I have followed will be of assistance to tuberculosis officers and to those interested in orthopædic work.

PS.—I have read with interest the paper in the last issue of THE LANCET on Surgical Tuberculosis in Egypt by Prof. R. V. Dolbey and Mr. A. W. Mooro. May I suggest that a trial of cellulose splints would overcome some of their difficulties regarding plaster application. It strikes me they are experiencing similar difficulties to those met with in this country years ago, when surgical cases were seen in an advancing condition without the help of a team of nurse visitors, propagandists, and preventive workers. With facility for heliotherapy in Egypt there seems no reason why conservative methods and earlier diagnosis should not gain the mastery there as they have done here.

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[1] THE LANCET, 1919, ii., 1193.

[2] To be obtained from the British Celanese, Ltd., 8, Waterloo-place, London, S.W. 1.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

AT a meeting of this section held on June 5th, Dr. CUTHBERT LOCKYER, the President, being in the chair, a series of three papers were read on the subject of

Wounds of the Gravid and Non-gravid Uterus,

being a study of uterine scars from the Gynæcological Department of the Glasgow Royal Infirmary.

Prof. J. MUNRO KERR dealt with the subject from the clinical standpoint, and started from the assumption that as the technique of gynæcological surgery gradually improved, it was necessary to realise increasingly the importance of conservative procedures in respect of the uterus. The operation of myomectomy was being gradually perfected, and most surgeons nowadays favoured conservative Cæsarean section in preference to sterilisation of the patient, all with the idea of conserving the uterus so that it could perpetuate its great function, and in order that in future pregnancies, should such occur, there would be no risk to either mother or child. Therefore, he contended, the profession could not rest content with an operation which gave 12 to 15 per cent. of mishaps in subsequent pregnancies. Myomectomy at the present time particularly concerned the gynæcologists, for two reasons. First, because the possibilities of the operation were not sufficiently appreciated, many performing hysterectomy when myomectomy was the more desirable operation. Many general surgeons who entered this region did not appreciate the extent of the conservative surgery which was possible. The second reason was that electrical and radiological experts with little knowledge of gynæcology carried out electrical treatment on these patients when such treatment was quite inadvisable. He ranged himself among those who contended that extensive myomectomies could be performed with gratifying results, and the operation should be developed and encouraged, in contrast with electrical treatment. He described the operation for resection of a uterus bicornis, which was done on one of his cases. The patient was aged 25, and when seen by him was two and a half months pregnant. As the cervix was dilated and the ovum could be felt through it, it was clear that it was not an extra-uterine pregnancy; but he could not decide whether it was a myoma complicating uterine pregnancy or a pregnancy in a double uterus. There was found to be a pregnancy in the right half. Later she had a second abortion in the right horn. He delivered a living child, but it died on the twelfth day of asphyxia following on the injuries at birth. Cæsarean section was done later, and a living and healthy child delivered, both returning home well. He did hysterectomy for her, as she dreaded another pregnancy. The scars were found to be good, and they consisted largely of fibrous tissue; they stood the strain of two pregnancies and two labours.

Prof. Kerr next described the case of a woman with a uterus having a rudimentary horn. Removal of the horn stopped the dysmenorrhœa, and some time afterwards she married and had an easy parturition. Since then she had had another labour, and that too was easy. He then described wounds in the uterus due to perforation of that organ with a sound. A specimen showed that very complete regeneration of muscle fibres might occur in a small wound of the uterus, but he did not think that was likely with a large wound in substance which was predominantly muscular; in such the scar would always be largely fibrous.

A fourth group of cases he dealt with were those in which Cæsarean section was done through the active contractile portion of the uterus. A number of such wounds were found to be defective and they gave way during subsequent pregnancy or labour. The scar seemed to be defective on its inner side, where there was a gutter. Infection of a wound was a most important factor in unsatisfactory unions, and another important factor was the material used for stitching the wound. Uterine muscle fibres during the puerperium were in a state of degeneration, and the sheaths of muscle forming the uterine wall were irregularly distributed and might not be exactly coapted. In conservative section the incision should be made over the lower uterine section, as this was less vascular than the upper and the surfaces of the wound could be more precisely approximated; moreover, it was more passive, and healing had a better chance. The mucous membrane should be separately stitched with very fine catgut or silk, and the edges of the fibro-muscular wall must be carefully coapted. He knew of no ruptures having subsequently occurred following this procedure, though the operation must have been performed thousands of times, especially in America and in Germany.

Dr. DONALD MCINTYRE showed by the epidiascope a large number of slides illustrative of his studies of various kinds of uterine scars, as well as a series of actual specimens. In a case of uterus unicornis there was shown to be fibrous thickening of the serous layer running into the myometrium, and in the deeper layer cicatricial tissue was present. In one case in which the ligature used was of silk minute strands of silk were found, surrounded by giant cells. The line of suture could be traced along an irregular course, and along this tract the fibrous tissue was increased in amount. Examination of scars after Cæsarean section showed that the muscle regeneration was perfect. When chromicised gut was used as the suture material there was no subsequent indication of the line of the suture. When unabsorbable material was used the ligatures might make their way to the exterior through the bladder, and the ligatures must cut through muscle before becoming free. In the majority of cases in which silk was used the knot remained intact. He had suggested to makers a combination of catgut and silk as a material for ligatures, and experiments had been made in three or four forms, specimens of which he showed at the meeting.

Dr. JAMES HENDRY dealt with observations made on the uterine scar after Cæsarean section: first, when the incision was made in the active contractile portion of the uterus; secondly, when it was made in the lower uterine segment. It was, he explained, a clinical supplement to the other two papers. At the second pregnancy after Cæsarean section he found no post-operative adhesions. The surface of the uterus might appear to be uniform, but to the finger passed over the surface depressions were evident, they could be felt rather than seen. In the first series—i.e., where the incision was made in the active contractile portion—the previous uterine wound could easily be traced, and there were a series of depressions, the inference drawn from this being that those areas were the seats of the original ligatures. Adhesions of a very dense type were present. In one case he did a classical Cæsarean section in August, 1921, and the uterine wound was closed with interrupted silk sutures. The abdominal wall healed by first intention, and the patient left the hospital on the twenty-third day. She returned three months ago stating that for six months she had felt what seemed like a knot in her womb, which swelled up when her periods occurred. He cut down and found a nodule the size of a green pea, but the scar appeared normal, as did the uterus. The nodule was excised and was found to consist of endometrial tissue encapsuled in white fibrous tissue. Another patient was readmitted complaining of urinary disturbance. A calculus was found with a silk ligature embedded in it; this was shown.

With regard to incision into the lower uterine segment, since May, 1921, he had carried this out in 41 cases. He incised transversely the loose peritoneum, and it was not necessary to disturb the bladder very much. The uterine wall was incised transversely. He now used two layers of continuous catgut for the uterine wall. In seven of the 41 cases the inner silk ligature was discharged per vaginam some time after the operation, and he had not experienced trouble from the ligatures in any other stage. The scar was indicated by a white line in two of the cases, and at the second operation that line was found to be free from adhesions. He set out in detail his reasons for choosing the incision in the lower uterine segment.

Discussion.

Dr. T. W. **EDEN** said the communications were of extraordinary interest, especially the portions dealing with the Cæsarean section scar. In days gone by Cæsarean section interested those of the specialty from the point of view of its indications, but that question had now been settled, and all that remained to be discussed in that relationship was the remote effect of incisions in the uterus. The way in which the operation had been popularised and was being done, not only by gynæcological experts but by surgeons and practitioners everywhere, rendered questions of technique as important as any surgical question existing at the present time. The amount of work which had been put into the subject by the three gentlemen who had read the papers was therefore of great value. Any degree of uterine sepsis during convalescence from Cæsarean section was a most important factor in the production of a weak scar afterwards. He had not regarded the material used for the ligaturing as a matter of great importance, and for many years he had been using only catgut; but he recognised that a great determinant of whether the uterine scar would be a sound one or not was the degree of sepsis present at the time. He asked whether one could ever expect a good uterine scar. That could only be settled by direct observation; but he had not understood why an end-to-end suture in the intestine, which was a contaminated structure, healed in a way which never caused weakening, while in the uterus it did not. The grave part of the communications had been that, even where there was an aseptic recovery, there might be a bad uterine scar. One reason was because the endometrial half of the wound was liable to heal badly, and a second reason was that the scar was liable to be invaded by endometrial tissue in a parasitic fashion, which produced another weak spot. Possibly the V-shaped depression in the inner half of the uterine scar might be got over by improvements in technique, but one could not control decidual tissue, and if it was likely to invade the scar and lodge into spaces it would be filled up by menstruation, and there would be a further weakening of the scar. Thus the gynæcologist was up against difficulties which he could not overcome. Perhaps the lower uterine segment operation would get rid of some of the difficulties, but he did not think it was altogether clear, from the histological points brought forward in the communications, that the lower uterine section scar would be perfect; there would be some risk of endometrial invasion, and even in that some irregularities of union had been shown.

Mr. **EARDLEY HOLLAND** said these contributions furthered the claims to superiority of the lower uterine section operation over the classical operation. From his experience of repeat operations he could say he had seldom, if ever, seen a perfect scar after a classical Cæsarean section. Constantly he saw scars which seemed perfect, but seldom were they free from one or several pits. With a finger in the uterus and one outside they could be palpated. He had done the lower uterine segment operation only 12 times, and he had found it a delightful operation in cases when the patient had been in labour, and not necessarily only when the labour had lasted some time, for it was so when the patient was no more than halfway through the second stage, as there was an appreciable development of the lower uterine segment. The operation was almost bloodless, one went through thin tissues which did not bleed, there was no need to hurry, and the fœtus was not jeopardised. It seemed as if one was extracting a fœtus through a fully dilated os. Performing the operation before the patient was in labour, however, had disadvantages. He made a curved incision with its convexity downwards, and a remarkably small incision was needed. He considered that the lower uterine segment incision had a great future, and that it would replace the ordinary classical Cæsarean section, at all events in the cases in which one expected the patient to have a repeat operation.

Dr. H. **RUSSELL ANDREWS** said the most alarming feature about the sections which had been shown was the depth to which the endometrium dipped in. The danger of having a weak scar was due to decidua getting into the layers of muscle. When there was more bleeding than usual in a case it was difficult to make sure of avoiding endometrium, and it was well to have more than one layer of sutures through the muscle. When once a patient had had a Cæsarean section, one felt one could not safely allow her again to have a labour in the ordinary way.

Prof. **MUNRO KERR**, Dr. **MCINTYRE**, and Dr. **HENDRY** replied briefly.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on June 4th, Sir **DAVID WALLACE**, the President, being in the chair, when Mr. J. W. **DOWDEN** read a paper on the principle of

Active Movement in Relation to Injury and Disease.

After briefly describing the anatomy and physiology of injury, Mr. Dowden said that a study of these subjects pointed to active exercise as the best remedy we had, not only for such conditions as fractures and sprains, but in many post-operative conditions. Amongst these he classed infected joints, infected tendon sheaths and cellulitis, and suppuration. Active movements were essential and should be commenced at once and carried out up to the point of producing pain. The patient must be encouraged daily to persevere in using his own muscles and his own brain. Passive movement and massage were not enough. It was his custom to commence active movements within 24 hours, and it was remarkable to see how the patient gained confidence and to what an extent the range of movement increased in a short time. By this means the tone of the muscles was kept up, adhesions were never allowed to form, and by the active contractions of the muscles the injured bones were gradually welded into shape and, in cases complicated by suppuration, the accumulating pus was driven from the wound. The paper was illustrated by many lantern slides which demonstrated in a remarkable way the healing processes in fractured bones after treatment by active movement. By following up cases for several years the speaker was able to show how perfect a functional result could be obtained, and he also had had the satisfaction of having X ray examinations which revealed no sign of previous injury in the bones.

Mr. C. W. **CATHCART**, congratulating Mr. Dowden on the success which had attended his work, said that great credit was due to him for the manner in which he had extended the work of Lucas-Championnière.

Mr. J. W. **STRUTHERS** said that while he had been much impressed by all that he had heard and seen of Mr. Dowden's work, he would have liked to have known more about Mr. Dowden's methods in the treatment of those difficult fractures which occurred now and then in the lower extremity. Most of the cases described were injuries of the arm in young persons.

Mr. **PIRIE WATSON**, Dr. D. **HUSKIE**, and Dr. J. W. **SOMERVILLE** joined in the discussion.

Dr. D. MURRAY LYON read a paper on the

Rôle of Dieting in Medicine.

By way of introduction Dr. Lyon briefly traced the history of dieting in medicine. Dieting was probably as old as medicine itself, for many diseases were accompanied by gastric upset which would call for a modification of food intake. Considerable progress was made along these lines by the empiricists, but the advent and application of organic chemistry and modern physiology had put the subject on a sound basis. Serious gaps still existed in our knowledge of many diseases, and dietetic systems based on faulty foundations had given rise to many fads and fancies. The primary objects in feeding were to supply heat and energy for the body and to allow for growth, storage, and replacement. When fats and carbohydrates were completely combusted in the body, they were said to yield exactly the same number of calories as they did when burnt up in the bomb calorimeter, but in the case of proteins combustion was not so complete, for the resulting end-products had still a heat value. Mellanby had suggested that too much attention had been directed to the calorie, and that other factors, such as the quantity and composition of the protein fraction, must be considered. The diet must include a minimum amount of protein containing certain amino-acids. Fats were of less importance, but the carbohydrate minimum was also fixed if acidosis was to be avoided. Other factors which must be present in the food were the various salts and bases and also the elusive vitamins. Dieting had proved of paramount importance in diabetes. Until recently the practice in treating diabetic patients had been to forbid the consumption of certain foods and to allow other articles of diet *ad libitum*, but a trial of Allen's principles taught us the enormous importance of regulating the diet. Insulin had further altered the outlook, for its use demanded the most careful dieting if hypoglycæmia was to be avoided. Dr. Lyon then proceeded to discuss some of the recent work done by Shaffer and Woodyatt, and pointed out its bearing in the construction of diabetic diets. The patient's glucose tolerance limited his intake of fat, and with regard to protein an amount equivalent to about 1 g. per kilo of body-weight was allowed. A fatty substance known as intarvin had recently been introduced which was almost equivalent in calories to an equal weight of butter, but, according to its discoverer, entirely harmless when taken *ad libitum*, since the organism could deal with it without the aid of carbohydrates and without giving rise to acid bodies. In nephritis considerable discussion had taken place regarding the diet. In the acute stages and in chronic cirrhotic lesions where nitrogenous retention was present it seemed desirable to limit the protein intake, but prolonged albuminuria meant a draining of protein from the system, and the practice of boldly raising the protein in the food had often given rise to apparently beneficial results. Where œdema was present attention to the salt content of the food was recommended, but in some cases restriction of the NaCl had no influence on the diet, and the author was tempted to ask whether any benefit could be derived from dieting such cases at all. Of the plans for treating peptic ulcer Dr. Lyon had had greatest success with the method put forward by Sippy. The principles here were to avoid those things which would call forth the gastric juice, to give small meals at frequent intervals and at the same time to secure for the patient sufficient calories. Under this régime pain ceased at once and within a few days a noticeable increase in weight took place. The science of dietetics was not only of interest to the physician, but was also of importance to the surgeon. Much could be done by dieting to put a patient into the best state for operation, and careful attention after surgical assistance would give the invalid the best chance of permanent recovery in the case of many gastric conditions.

Discussing the question of dieting in hospital practice, Dr. Lyon described what had been done by the institution in nearly all large American hospitals of a special class of official known as a dietitian. The position and duties of these people varied, but they were responsible for the preparation of the food, acting on the prescription of the physician in charge of the case, and by this means an unlimited number of cases requiring special diets could be handled without adding to the work of the ward staff. Another important duty of this official was to instruct those patients who required it in the best methods of constructing, preparing, and arranging their diets. From his experience at the diabetic out-patient clinic of the Royal Infirmary Dr. Lyon was convinced that the exact dieting required in this disease could be satisfactorily and readily carried out in general practice even by uneducated persons. Dieting played a part in preventive medicine, but the more the question was studied the more one was impressed with the multiplicity of causes which acted together in producing ill-health.

Dr. CHALMERS WATSON, in opening the discussion, said that it was necessary to give more attention to the bacterial flora of the intestinal tract before the influence of diet on the patient could be fully understood. He referred also to the great increase in the consumption of meat per head of the population in this country during the last 25 years.

Dr. CLAUDE KER said that from his experience of certain febrile conditions—for instance, typhoid fever—he was tempted to agree with Dr. Lyon and ask if diet in these cases had any beneficial effects at all. Typhoid cases seemed to do equally well on a full diet, on a light diet, or even on practically no diet. He was interested to hear more of the rôle of the dietitian, and now that such an office had been established in the Royal Infirmary he felt sure that it would not be long before a special dietetic kitchen was built, which would be of great help in the handling of those cases which required special care.

Dr. HUSKIE believed that in the construction of diets it was essential to consider the personal idiosyncrasies of the patient.

Prof. G. M. ROBERTSON, Dr. SOMERVILLE, and Dr. C. G. LAMBIE also took part in the discussion.

Mr. PIRIE WATSON exhibited and described a specimen of bilateral hydronephrosis due to blockage of each pelvis by a single calculus.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION.—This association will meet in conference in London from July 14th to 19th. The association was inaugurated in New York in 1919, and held a meeting in Geneva in 1922, at which the constitution was drawn up. It is expected that some 24 nations will be represented at this London meeting, the first to be held under the fully constituted representative council. There will be business meetings, and a discussion on Maternal Morbidity, its Causes and Prevention, and there is a full and varied programme of entertainments and expeditions. The hon. secretary of the Hospitality Committee is Dr. Kathleen F. Lander, 49, Albany-street, N.W. 1, from whom all particulars may be obtained.

ENCEPHALITIS LETHARGICA IN NORTHERN IRELAND.
A considerable epidemic of encephalitis lethargica has prevailed in Belfast and the surrounding area during the last few weeks. Up to June 6th the number of cases notified in Belfast was 198, with 16 deaths. The attacks, our correspondent writes, have varied much in intensity, some being very mild, others severe. The initial stages have been characterised in some cases by severe neuralgic pains in various parts of the body and choreiform movements, which have given rise to some difficulty in diagnosis. Marked mental perturbation has been common. A mild and irregular pyrexia has been the rule. Double vision has been a frequent symptom, and paralyses of some of the cranial nerves have occurred in many cases. The stuporous condition seems to have been less marked than in the last visitation in 1921, and some patients have had a prolonged period of extreme restlessness, requiring restraint. The disease has not spread in households, and there has been hardly any definite evidence of direct infection. The cases have occurred sporadically in various parts of the city, and neither age nor social position seems to have much, if any, influence. It is too soon yet to draw any conclusion as to the prospects of complete recovery. Many cases have run a protracted course.

Reviews and Notices of Books.

CARDIOLOGY.

Modern Methods in the Diagnosis and Treatment of Heart Disease. By Francis Heatherley, M.B., B.S. Lond., F.R.C.S., Temp. Capt. R.A.M.C., Superintendent Heart Clinic, Manchester; and Cardiologist to the Ministry of Pensions. London: Baillière, Tindall and Cox. 1923. Pp. 199. 5*s.*

This volume of 200 pages was written at the suggestion of a colleague with whom the author was associated while acting as cardiologist to the Ministry of Pensions at Manchester. The work was undertaken with the object of presenting to the general practitioner a sketch of our present-day knowledge of heart disease. It is not intended as a text-book, and is only a general outline of the common disorders of the cardiovascular system, without reference to the special and well-known methods of instrumental examination. The book has been submitted to Sir Thomas Lewis and Dr. John Hay for their criticism and it is apparent that much of the information given in this small volume comes from the published works of these well-known authorities.

In the opening chapters the author contrasts the modern conception of heart disease with the older views. There is a chapter on the arrhythmias, which should be helpful to the general practitioner who has had no experience with polygraphic and electrocardiographic methods. There is a good description of heart failure with congestion; in dealing with heart failure of the anginal type the teaching of Mackenzie has been followed. Pain, breathlessness, palpitation, giddiness, and other symptoms of myocardial exhaustion are briefly considered in the light of recent investigations, and the physical signs of structural disease of the heart are treated in a similar manner. A short chapter on prognosis and treatment includes a helpful account of the procedure to be employed in getting the patient with auricular fibrillation under the influence of digitalis.

This book can be recommended to practitioners, as showing the methods which the medical officers of the Ministry of Pensions have employed with great success in dealing with cardiovascular disease.

The Heart. By Dr. Selian Neuhof, B.S., M.D., Visiting Physician, Central and Neurological Hospital; Consulting Cardiologist, Broad-street Hospital, New York. London: Stanley Phillips; Philadelphia: P. Blakiston's Son and Co. 1923. Pp. 701. $10.00.

The aim of the author in publishing this book is to present the entire subject of cardiac and cardiovascular disturbances and diseases in a clear, well-balanced manner from the clinician's rather than from a highly specialised viewpoint. He has succeeded in this aim, for his book covers the entire field of cardiovascular disease, functional and structural, in an admirable manner. He has written a book of 700 pages in readable English, well illustrated, with many diagrams, tracings, and electrocardiographic curves, and an inclusive bibliography.

The book is divided into two parts, the first, of 33 chapters, covers the whole field of cardiovascular disease. The opening chapters deal with the embryology and anatomy of the heart, the fœtal circulation, and congenital malformations in the usual text-book manner. In an early chapter there is an adequate discussion of our present-day knowledge of the physiology of heart muscle. Cardiac histology and pathology are briefly treated with two good paragraphs on hypertrophy. In summing up our knowledge of the dynamics of a normal heart cycle and its clinical application to cardiac dilatation, the author is of the opinion that such dilatation unless extreme is not easily recognised, and that we should use the term cardiac dilatation with great caution. Many pages are given to graphic methods; he explains the use of the Mackenzie polygraph, and how radial and venous tracings should be analysed. The principles of electrocardiography, the use of the Einthoven string galvanometer, and the interpretation of curves, are described in a manner suitable for a text-book of this nature. All the essential information upon the arrhythmias is contained in three chapters of 80 pages, each type of irregularity being illustrated by many polygraphic tracings and electrocardiographic curves. In the chapter dealing with the X ray examination of the heart, orthodiascopic standards are accepted as representing accurately the size of the heart. Telerontgenography gives excellent results, but lacks many of the advantages of orthodiascopy for clinical purposes. There is a very good description of the physical signs associated with cardiac enlargement and valve disease. In the discussion of systolic murmurs the statement is made that organic murmurs are easily distinguished from non-organic murmurs. This view is not generally accepted. In the chapter on heart failure, the symptoms and signs associated with it, the functional tests for estimating cardiac reserve, are well dealt with. In his description of the clinical features of subacute infective endocarditis, the author fails to mention clubbed fingers as a valuable sign of this disease. Cardiac syphilis is treated in the usual text-book style, and the remaining chapters conclude a comprehensive outline of cardiovascular disease which should be helpful to both student and general practitioner.

Part II. consists of a series of cardiovascular clinics in the form of case-histories given as a course of clinical conferences to senior students of medicine. The volume is well bound and printed on good paper, with not more than the usual number of typographical errors.

Der Einfluss tiefer Atmung auf den Herzrythmus und seine klinische Verwendung. By the late Dr. Alfred Pongs, Privatdoz. f. innere Medizin, und Oberarzt d. med. Universitäts-Klinik zu Frankfurt a/M. Berlin: Julius Springer. 1923. With 160 tracings. Pp. 326.

The well-known sinus-arrhythmia is dealt with at some length from a theoretical and experimental point of view, and the alterations in the heart-rhythm in both general and heart disease are exemplified by the description of numerous cases under the author's care. There is, unfortunately, no index; but the book should appeal to the clinician no less than to the cardiologist.

A Key to the Electrocardiogram. By Louis Faugeres Bishop, M.A., M.D., Sc.D., F.A.C.P., Professor of the Heart and Circulatory Diseases, Fordham University, U.S.A., School of Medicine, New York City. London: Baillière, Tindall and Cox. 1923. Pp. 96. 15*s.*

These 15 chapters are an expansion of papers read at different times before specialists and general practitioners. It is doubtful whether a reader without knowledge of electrocardiography will find the book helpful in understanding the mechanism of the heart-beat, or useful in distinguishing normal from abnormal electrocardiographic curves. To illustrate the exactness of electrocardiography in the clinical examination of the heart as compared with auscultation, the author, in the preface, compares the movements of a frog in a closed box as determined by listening to the sounds made by the animal, with watching the movements of strings attached to its legs. This is typical of the style in which this book of 96 pages is written. In his efforts to explain the irregularities of the heart and other signs revealed by the electrocardiograph, the author in discursive style employs similes and metaphors which are sometimes useful but sometimes untimely. In attempting to explain in simple terms the principles of electrocardiography, he fails to give a true impression of the real value of the galvanometer in the clinical examination of the patient with cardiovascular disease. In the appendix there is a photograph of the Hindle electrocardiograph, and directions are given for the installation of an electrocardiograph, and the procedure usually adopted in taking an electrocardiographic curve. In this country the galvanometer in general use is the instrument made by the Cambridge and Paul Instrument Co. Directions given for the Hindle will not apply to the Cambridge and Paul instrument.

MICROBIOLOGICAL TECHNIQUE.

Handbuch der mikrobiologischen Technik. Edited by Prof. R. KRAUS (Vienna) and Prof. P. UHLENHUTH (Freiburg, i/B). Berlin: Urban und Schwarzenberg. 1924. Vol. III. Pp. 987. Swiss Fr.41.25; bound, Swiss Fr.45.75.

THE third volume of this handbook contains a number of chapters of interest. The late Prof. A. Klöcker, of Copenhagen, deals with the cultivation of yeasts. This chapter is followed by a well-illustrated one on pathogenic fungi for which Prof. H. O. Plaut, of Hamburg, is responsible. Insects of pathological importance are dealt with in chapters by Dr. A. Lutz, of Rio de Janeiro, and Dr. R. Haas, of Berlin, respectively; the latter also describes methods for breeding and handling them. Chapters follow on pathogenic worms, on filarias, on soil organisms, on the microbiological investigation of milk, of water, and of air. A brief chapter by Dr. T. Péterfi gives an account of the new subject of micro-dissection, here called the "micrurgical method," which has been developed and practised until now almost exclusively in America. The most interesting chapters are those by Prof. W. Rosenthal, of Göttingen, on the technique of filtration and ultra-filtration with special reference to the isolation and demonstration of the filterable viruses. These two chapters give a very complete account of the whole subject and contain a remarkably extensive bibliography of nearly 700 references. A number of chapters on the organisation and equipment of bacteriological institutes complete the volume—a somewhat unnecessary addition to a very bulky tome.

The work contains much information which is not readily found in the ordinary text-book and should prove a useful book of reference.

MODERN THEORIES OF THE UNCONSCIOUS.

By W. L. NORTHRIDGE, M.A., Ph.D. With an Introduction by Prof. J. LAIRD, M.A. London: Kegan Paul. 1924. Pp. 194. 8*s.* 6*d.*

Dr. Northridge gives an account of early theories of the unconscious as propounded by philosophers, and shows their relation to and contrast with modern theories, which, he says, have been built up out of a close study of mental data and, for the most part, with a practical aim. The views of these philosophers are given with a scarcity of dates which is unkind to the tyro. One can, for example, only discover by close reading that Hartmann's "Philosophy of the Unconscious," in spite of its apparently up-to-date title, belongs to the period between Schopenhauer and William James. One of the few dates provided is, however, of interest. Thomas Reid wrote that "every operation of our mind is attended with consciousness, . . . and to speak of perceptions of which we are not conscious is to speak without any meaning." This reads like a fragment of current controversy, but was written in 1785. W. H. Myers is taken as the first exponent of modern ideas, though his introduction of a "supernal faculty" made his "subliminal self" a confusion of two conceptions. The development of theory is traced in the work of Janet, Morton Prince, and others, and a critical and historical account is given of Freud's psycho-analytical practice and theory. The author dismisses Jung's "collective unconscious" as unnecessary, and agrees with Rivers in denying that repressed sexual tendencies are always the real cause of a neurosis. To justify this conclusion he quotes the result of an analysis which lasted only six sittings and removed the symptoms after the abreaction of experiences which the patient had "largely succeeded in banishing from her mind." Psycho-analysts would certainly reply that no true analysis took place.

Dr. Northridge struggles with the difficulty of conceiving unconscious mental processes which possess all the attributes of conscious ones except that the subject is not aware of them, and finds it too great. Writing in no carping spirit, he declares that "There cannot be 'unconscious ideas' or 'unconscious wishes' unless what introspection reveals to us of our conscious processes is hopelessly astray." This sums up the position perhaps better than the author realises, and accords with other passages in which he shows his reluctance to give up a belief in the unchallenged supremacy of the consciousness. Unlike other objectors to the theory of the unconscious, he has found it to be true that those who pour scorn upon psycho-analysis will understand its value if they put it to the test themselves. His own tentative formula for the content of the unconscious is unsatisfying, and it seems that for those who share his difficulty the only escape is to accept the current theory with the proviso that some things happen as if it were true, but other things contradict it.

The historical part of the book should lead psycho-analysts to look with respect upon pre-analytical philosophers. Dr. Northridge's practical contributions are too slight to be of value in themselves, but there is so much a priori denial of psycho-analytical findings that one welcomes the advent of a critic who has put the principles to the test of practical investigation.

TOPOGRAPHICAL ANATOMY OF THE HEAD AND NECK OF THE HORSE.

By O. CHARNOCK BRADLEY, M.D., D.Sc., M.R.C.V.S., Principal, Royal (Dick) Veterinary College, Edinburgh; Lecturer on Comparative Anatomy, University of Edinburgh. Edinburgh: W. Green and Sons, Ltd. 1923. With 96 illustrations. Pp. 228. 21*s.*

THE present volume forms the last of three by the same author dealing with the topographical anatomy of the horse, the limbs and trunk having already been considered. The aim of the work is the same as that of its admirable companion volumes—viz., to act without over-elaboration as a dissection guide. Its appeal is therefore directly to the student, and although the head and neck are not of same daily importance to the practitioners as the limbs and trunk, it should also be of value and interest to him. Over 40 out of a total of 214 pages are devoted to the brain, spinal cord, and their coverings. The directions, descriptions, and illustrations are of the same high standard as in the earlier volumes. There are good tables and a full index. An ambiguous statement appears in the first sentence on p. 180, where under cerebral nerves the author states: "Twelve pairs of nerves arise from each half of the brain." This surely must be double the actual number. The work will undoubtedly be used in those veterinary schools where modern nomenclature is taught.

AIDS TO PRACTICAL PATHOLOGY.

By F. W. GRIFFIN, M.A., M.D., B.C. Camb., Assistant Pathologist; and W. F. M. THOMPSON, Chief Technical Assistant, Virol Pathological Research Laboratories. London: Baillière, Tindall and Cox. 1923. Pp. 246. 4*s.*

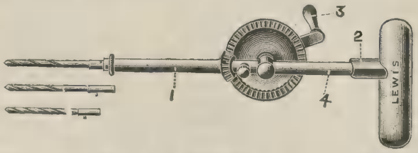
IN this volume the authors have faced the formidable task of bringing together for the use, not only of students and practitioners, but also of laboratory workers, the great bulk of the procedures more commonly used in bacteriological, histological, and biochemical investigations. Notwithstanding the fact that the book contains only 246 pages, being of the compact and handy format of all its predecessors in the "Aids" series, there is hardly any well-recognised procedure of laboratory diagnosis that fails to find place therein. The descriptions of the technique of the various methods are clear and to the point. The wholly inexperienced might find it difficult to work from the book alone, but most of the descriptions are such that any given method, or a kindred one, having once been performed under supervision, it should be possible for a worker of reasonable intelligence to carry on by the book.

It is a reflection of the spirit of the medicine of the day that most of the bacteriological technique is compressed into the first 45 pages; the bulk of the remainder of the book is devoted to biochemistry, the methods of morbid histology coming in for a scant 18 pages at the end. The whole is severely practical; as a cram-book it might well be productive of "brain fever," but as a bench manual, both for the present-day medical student and the laboratory worker, it will be of real value. Some references are given; more would have added to the value of the book.

New Inventions.

AN IMPROVED BONE DRILL.

I wish to bring to the notice of your readers an improved bone drill (see figure) which I have had made to my design. Its object is to avoid the faults of the ordinary bone drill—namely, (1) defective balance; (2) insufficient length; (3) uncomfortable handle; and (4) a gear-wheel handle which does not revolve freely on its axis. In the improved bone drill (1) the instrument balances at the spot marked 4 in the figure, and as a consequence seems almost to retain itself at right angles to the bone automatically without any muscular effort on the part of the surgeon, and without any tendency for the drill-point to snap off in the bone; (2) the stem which holds the detachable drill-point has been doubled in length, marked 1, enabling the drill to be used in the deepest wound without the surgeon's hand coming anywhere near it; (3) the tiring of the fingers, in consequence of the unsuitable shape of the part of the stem which meets the handle at right angles, is obviated by making this part of the stem marked 2 flattened from above downward; (4) the handle revolves freely on its long axis, but has no projecting milled head or screw of any kind, and one can turn it for any length of time without the glove becoming caught and damaged with the consequent spoiling of aseptic technique. Briefly, the merits of the instrument are that it balances itself without any conscious effort on the part of the operator: there is no fear of the drill-point snapping off, the drill can be used without the hand of the operator entering the wound, and without his glove getting torn. Any number of holes can be drilled without causing the slightest fatigue or discomfort.



Messrs. Lewis and Sons, 2, Westmoreland-street, London, W. 1, are the makers.

Paul Bernard Roth,
Orthopædic Surgeon to the Miller General and Homœopathic Hospitals.

Reports and Analytical Records.

FRIARY NON-DEPOSIT DINNER ALE AND FRIARY DOUBLE STOUT.

(Friary, Holroyd and Healy's Breweries, Ltd., Guildford.)

These two samples of bottled beers have been submitted to us for examination. When analysed the following results were obtained:—

	Dinner ale.		Double stout.
Specific gravity of wort before fermentation	1038·15°	..	1039·68°
Present specific gravity	1011·94°	..	1013·02°
Alcohol per cent. by volume ..	3·4	..	3·5
Extractives per cent. (total soluble matter)	4·3	..	4·6
Acidity per cent. as acetic acid ..	0·07	..	0·08
Original wort solids fermented, per cent.	56	..	55
Fermentable sugar still present, per cent.	0·75	..	0·83
Preservatives (salicylates and sulphites)	Absent.	..	Absent.

Both beers were in good condition, brilliant and entirely free from deposit. They were extremely palatable, and have clearly been brewed from high-class materials on sound lines. The pleasing appearance of the ale and stout in glass and the attractive and novel get-up of the bottles indicate that the proprietors of this well-known brewery appreciate the æsthetic aspect of marketing our national beverage.

"BILINA": NATURAL DIGESTIVE WATER.

(The International Development Co., Ltd., 4, Trafalgar-square, W.C. 2.)

This water is derived from springs situated close ot the town of Bilina in Czecho-Slovakia. When analysed it was found to have the composition (expressed as grains per gallon):—

Chlorine (Cl)	11·87
Sulphuric acid (SO_3)	35·05
Lime (CaO)	12·15
Magnesia (MgO)	4·54
Silica (SiO_2)	2·80
Soda (Na_2O)	135·04
Potassium and lithium	Traces.
Specific gravity (water = 1000)	1004·46

These are probably combined as follows:—

Sodium chloride (NaCl)	19·58
,, sulphate (Na_2SO_4)	62·15
,, bicarbonate ($NaHCO_3$)	264·4
Magnesium bicarbonate ($Mg(HCO_3)_2$) ..	16·5
Bicarbonate of lime ($Ca(HCO_3)_2$)	35·1
Silica (SiO_2)	2·8
	400·53

This is a somewhat remarkable water of the Vichy type, and the bulk of the saline constituents are in the form of bicarbonates. The water is well charged with carbonic acid gas, and it possesses the agreeable salty taste characteristic of bicarbonate of soda. The sodium sulphate present confers on it slightly laxative properties.

ENERGEN BREAD.

We have received the following communication from the Therapeutic Foods Co., Willesden, London, N.W.:—

"In the report published under the above heading in The Lancet of May 24th we notice the observation 'that the manufacturer should state the percentage of carbohydrate in his product, since this practice would be of great assistance to the physician in prescribing a diet.' We are entirely in agreement with this view. This Company has always issued to the medical profession complete analyses of all the Energen products, and these are at the disposal of any physician who may be good enough to apply to us for them."

THE LANCET.

LONDON: SATURDAY, JUNE 14, 1924.

EPIDEMIC DISEASE IN THE FAR EAST.

As an outcome of a proposal put forward by Dr. Miyajima, the first Japanese representative on the League of Nations Health Committee, to that Committee, a mission was despatched at the end of 1922 to the Far East to collect information in regard to the incidence of epidemics in important ports where international complications might be expected and where measures were necessary to prevent the transmission of these diseases to other centres. The original proposal was to form a mission of three or four public health experts of high standing in their different countries, but Dr. Norman White undertook the inquiry single-handed, as it was found difficult in the time available to nominate other authorities who could be spared from their posts for as long a period as six months. Dr. Miyajima accompanied the mission throughout the visits to Formosa, Korea, and South Manchuria; and in the part of the tour which covered Hong-Kong, Shanghai, and Japan, Dr. H. F. Smith, of the Public Health Service of the United States, also acted as an unofficial and valuable colleague, but the resulting report of the mission must be looked upon as practically individual.

The scope of the inquiry was large, as befitted so fundamental an idea. It was proposed to include in the report not only the ascertainable facts on the incidence of the most important epidemic diseases in the various ports of the Far East over a period of five years, and to note the part played by shipping in the spread of infection and the efficacy of quarantine regulations, but also to discover the possibility of diffusing useful information upon epidemic outbreaks and endemic pestilences among the constituent nations, to provide a scheme for the interchange of experiences, and to frame some form of convention for regulating national and international efforts along the indicated lines, securing especially uniform procedure in the chief ports in respect of public health and quarantine regulations. In many ways the report meets this large reference satisfactorily. The total distance covered in Dr. Norman White's itinerary was 35,000 miles, exclusive of short journeys of inspection, and the whole of this extensive journeying was accomplished between Nov. 28th, 1922, when he left Bangkok, and July 29th, 1923, when he arrived at Marseilles, some of the principal places visited being Singapore, Java, Hong-Kong, Shanghai, Tokyo, Peking, Saigon, Rangoon, Calcutta, Bombay, and Marseilles. The stay in certain of the ports was necessarily of a limited duration, but in spite of the rapidity of travel and the brevity of the visits an enormous amount of information was collected. This has been compared, amplified, and verified by Dr. White in his report with all the health publications and monographs necessary to complete the various sections of the work; while the investigations on the spot are described in greater or less detail as the facts have warranted, neither formal questionnaire was issued nor was special pattern of inquiry followed. The early chapters deal with plague, cholera, and small-pox in the Far East, plague being given precedence as, all things considered, the most important ship-borne disease in the Orient. The chapter on plague condenses with clearness the more salient epidemiological facts emerging from a study of a history of the disease during 25 years, and among the points on which Dr. White insists are the evidence for considering bubonic plague and pneumonic plague to be two distinct diseases, and the conclusion that the plague bacillus alone cannot cause widespread epidemics of pneumonic plague. Stress is laid on the non-infectiousness of human bubonic plague; this is another way of saying that as an epidemiological problem we are dealing with a rat disease first and last, so that, if it were possible to break the association of rats and grain, the control of the disease might be assured—at any rate, as a ship-borne scourge. The monograph on cholera indicates upon statistical grounds that certain provinces in British India are by far the largest and most persistent centres of cholera infection in the world. Here, says the report, the cholera problem is one of unparalleled difficulty, being bound up with considerations of centuries-old customs, habits, and prejudices, but the attention at last being given to rural sanitation in India should work a vast improvement. The question of small-pox in the Far East is dismissed briefly, though the existence at different dates of serious and widespread epidemics is noted. The view held in the report is that, though the infection is more widespread than with plague or with cholera, the dangers of transferring infection by ship are confined almost entirely to such classes of passengers as labour squads or pilgrims, while the general attention paid to vaccination in all parts of the East minimises these dangers.

There follows an elaborate draft for a sanitary convention between the countries concerned for the control of infectious diseases in the Far East, based upon the results of the mission, to which is appended a Bill of Health form which would be a most desirable one for use in all ports in the Far East where, at the present time, Bills of Health are frequently of little or no value, their object in certain places appearing even to be the express withholding of information. The plan for this convention, as proposed by Dr. White, is not on all fours with the existing International Sanitary Convention of 1912. Some parts of it, indeed, may prove difficult to reconcile with the principles on which the official revision of that Convention is now proceeding. But the draft has the obvious advantage of indicating to governments the kind of problems which may have to be met by some future form of international agreement. The concluding and greater portion of a voluminous and admirable document is occupied by series of detailed facts in respect of the incidence of all epidemic diseases in the special centres visited, with a plea for an international epidemiological intelligence bureau for the Far East. The monographs as they concern various localities are based upon assistance freely offered from many authoritative sources, and Dr. White here, as elsewhere in his report, points out the great help he has received in his work from different quarters where he has found personal acknowledgment impossible, and where he has had no opportunity of submitting the resulting sections to revision by collaborators. All these chapters prove the practical utility that such an intelligence bureau would have, for combinations to delimit epidemics can only be set in motion in response to prompt and precise knowledge. The important functions of the proposed bureau would be to summarise in a convenient form, and to circulate to all signatory countries and to the health organisation of the League of Nations, matters of public health and statistical urgency. To this bureau each country would state what it considered necessary with regard to ships arriving from an infected country; it would detail the facilities which would be granted on arrival and the measures which would be enforced before departure. The director of the bureau would be in a position to correspond with the port administrative officers, and to these functions others, as they became indicated by experience, might be added. The suggestion to establish such a bureau is in accord with the expressed views of many authorities, and it seems probable that it will be placed before the League of Nations Council at their forthcoming meeting, when Singapore is obviously indicated as the place for such a central station.

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A PROBLEM OF NUTRITION.

The second decade of this century has witnessed a unique experiment in nutrition, in which a whole nation was the test object. The results of this experiment, which was an involuntary one and proceeded in Denmark, are of far-reaching importance. We owe our knowledge of the matter to two Danish physicians, Dr. C. E. Bloch and Dr. O Blegvad. Dr. Bloch[1] observed in 1917 an outbreak of keratomalacia in a children's institution. He could show that the children, although living on a mixed diet, did not receive a sufficient supply of the fat-soluble vitamin A in their diet owing to the fact that the main supplies of this vitamin in a child's dietary, butter and whole milk, had been replaced by margarine and skimmed milk. Dr. Blegvad collected all the cases of xerophthalmia and keratomalacia which had occurred throughout the country during the 12 years 1909–1920. He investigated carefully the conditions under which the disease developed, the age of the children, their food, their general state of health, the economic position of the parents, the seasonal incidence of the disease, and so on, and published this material last year in Danish in a monograph entitled "Om Xerophthalmien." Quite recently he has published a summary of his work in English in the *American Journal of Ophthalmology*. To-day we publish a paper by Prof. E. Widmark, of Lund, Sweden, who, on the basis of Dr. Blegvad's work, draws conclusions of great general importance. We learn from Dr. Blegvad's interesting historical account of the disease that it was first defined as a clinical entity about the middle of the nineteenth century by Arlt and a few years later by von Gräfe. The ætiology of the disease was so little understood that until the beginning of this century the mortality in infants developing keratomalacia was almost 100 per cent., so that the onset of the disease was regarded as a symptom of imminent death. In 1903 Fehr noted as a curiosity a case of keratomalacia in a baby whom he succeeded in saving from death. And as late as 1913 a publication based on 93 cases gave a mortality of 50 per cent.

The discovery of vitamins has revolutionised the outlook on this disease. It has been possible to reproduce the disease experimentally in animals by keeping them on a diet poor in the fat-soluble vitamin A and to cure it again rapidly by administering food substances rich in this vitamin, such as cod-liver oil or butter fat. Incidentally Dr. Blegvad makes an interesting contribution to the history of medicine by showing that the treatment of night-blindness—an early symptom frequently associated with xerosis conjunctivæ and occurring in badly nourished children—is mentioned in Eber's papyrus, dating probably from 1500 B.C. The treatment recommended by the ancient Egyptians was the administration of liver, and we know now that of all animal tissues the liver of herbivorous animals and of many fishes is particularly rich in the fat-soluble vitamin. This knowledge seems to have spread from Egypt all over the world. For Hippocrates recommends raw ox-liver dipped in honey, and in Japan and China the liver of hens and of sheep were used. This treatment with ox-liver persisted even to the beginning of this century. Dr. Blegvad's theory is based on 453 cases of keratomalacia, of which all but 19 occurred in children, and 148 cases of xerosis of the conjunctiva without keratomalacia. From a careful consideration of all the factors involved Dr. Blegvad concludes that the main ætiological factor of the disease in children is the same as in young animals—namely, a diet poor in the fat-soluble vitamin A. In terms of ordinary foodstuffs the disease in Denmark, at any rate, is due to the substitution of margarine for butter and of skimmed milk for whole milk. All the cases in which the weight of the children were recorded showed a greatly impaired growth. The disease might be called an economic disease. It occurred only among the children of the poorer classes. The treatment consisted in giving whole milk with or without cod-liver oil. In Bloch's cases, which could be treated in an institution, and where, therefore, the diagnosis could be made at an early stage of the disease, the mortality was thus reduced to 10 per cent. The mortality of the cases collected by Dr. Blegvad was still 21 per cent., mainly owing to the fact that the disease begins so insidiously that the children were not brought to the doctor soon enough. It is a significant fact that the cause of death was nearly always broncho-pneumonia—another striking similarity to the condition observed in animals, which die usually from septic lung conditions. Although the disease itself yields so effectively, vision usually remains damaged. Only 14 per cent. of Dr. Blegvad's cases recovered with undamaged vision, 27 per cent. were blind, and 24 per cent. had vision greatly reduced in both eyes, while in 35 per cent. visual acuity was reduced in one eye.

It would be a mistake to look upon Dr. Blegvad's work merely as a striking illustration of the solution of a clinical problem by the data furnished by experiments on animals, with a corresponding reduction in the mortality from 100 per cent. to nearly 10 per cent. Its significance goes much further. The experience of Denmark has demonstrated beyond doubt that the teachings of the new physiology of nutrition, associated with the conception of vitamins, cannot be neglected with impunity by a community, even though it may live under the conditions of our civilisation on a varied and freely chosen diet restricted only by economic considerations. The widespread belief that since we live on a mixed diet we somehow pick up enough of the necessary vitamins to maintain us in good health is shown to be mistaken. And the extent of the vitamin deficiency must not be gathered from the relatively few cases of the eye disease which have been observed. This is merely a final symptom when the deficiency has reached the extreme stage. It is associated with other disturbances such as malnutrition, anæmia, general debility, diminished resistance to respiratory infections, which make their appearance long before the eye disease develops. As Prof. Widmark puts it, for every case of xerophthalmia there is a whole army of patients whose health has been undermined by deprivation of vitamins, but whose diseases get other names. The same view has recently been expressed by Dr. W. Cramer [2] in a lecture published in our columns. He emphasised the necessity of an *abundant* supply of vitamin for the maintenance of health especially in a young organism. He pointed out that one of the results of our present civilisation has been to deprive those foodstuffs, which are the main supplies of vitamins, of their vitamin content, and he gave reasons for believing that this may constitute a serious danger to the health of a nation. The data collected in Denmark and presented by Prof. Widmark can leave little doubt as to the reality of this danger. We have a vast amount of ill-health among the children of this country. Sir George Newman, in his report on the health of the school child, states that while 80–90 per cent. of the children are born healthy, 35–40 per cent. of the children who are admitted to school at 5 years of age bear with them physical defects which could have been either prevented or cured. He does not exaggerate when he describes this as the most serious and wasteful defect in our national health service, and he attributes this appalling result mainly to bad housing, parental neglect, and absence of hygienic supervision, and these are no doubt important factors. But the complete omission of an adequate supply of vitamins as one of the causes of this vast amount of preventable ill-health is striking, though the importance of this factor is as yet little appreciated in this country. Good housing, care, and cleanliness cannot make up for a deficiency in this factor, for the disease xerophthalmia has occurred in institutions where, in spite of repeated investigations, no fault could be found with the conditions of life of the children until the discovery of vitamins gave the clue. The problem of an adequate vitamin supply to the community, which affects the health of the nation so closely, is a vast one; it involves not only medical and biochemical considerations, but is also an economic and a social problem. It well deserves the labours of a Special Committee.

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[1] Journal of Hygiene, 1921, xvii., 283.

SEX DETERMINATION.

Sex is determined by the sex chromosomes, two in number. In females these are similar to one another, and are generally denoted X and X; in the male they are dissimilar, morphologically and functionally, and are marked X and Y. In the reducing divisions leading to the formation of eggs and spermatozoa these numbers are halved. As a result all eggs have one X chromosome, some spermatozoa have an X, some spermatozoa have a Y. By random fertilisation between eggs and spermatozoa so constituted a population is produced of individuals with XX (which are females) and individuals with XY (which are males) in approximately equal proportions. The sex chromosomes contain genetic factors other than those determining sex, and the qualities determined by these factors are therefore inherited in relation to sex—for example, hæmophilia.

Such in its simplest form is the explanation of sex puzzles which modern histological and experimental work have combined to elaborate into a singularly convincing whole. The whole question is dealt with in a most interesting and comprehensive way by Mr. Julian Huxley in *Medical Science* (1924, x., 91), and we are glad that the Medical Research Council takes the wide view which enables the readers of its journal to familiarise themselves so conveniently with the present state of knowledge in a subject which has advanced with bewildering rapidity and has almost endless medical implications. Take, for example, the sex-ratio and the possibility of varying the ratio and even of influencing the sex of a particular child. At birth there are about 103 males to 100 females; it is known that fœtal mortality falls more heavily on males, and the primary ratio—i.e., the ratio at the time of conception—is probably about 120 or even higher. Hence, since X and Y spermatozoa are produced in equal numbers, the Y variety must have some advantage. It has been shown that human spermatozoa are of two sizes, and since the Y chromosome is smaller than the X the ones with the smaller heads may reasonably be assumed to be genetically Y or male-determining. It is not difficult to imagine that herein lies the advantage which the Y spermatozoa have, that they are more easily able to burrow about and make their comparatively long journey from the vagina to the Fallopian tubes. And lively eugenic imaginations will see in some method of differential filtering or diffusion a means of getting a boy or girl at will. Profuse copulation is also known to have a considerable influence on the ratio, Hays' experiments on rabbits bearing out the "vulgar error" that moderation is more likely to result in boys. Artificial selection of inbred stocks may also lead to brands of rats with familial tendencies to ratios as different as 122 and 82. But though maleness has an advantage at the outset, the balance is severely against it afterwards, and, as is well known, the excess mortality among male children reduces the ratio to less than 100 after the first few years of life. The most likely explanation of this is that in the sex chromosomes are carried also recessive factors which, when they become manifest by appropriate matings, are lethal or tend to lethality: such a character is more likely to appear in males with one X chromosome than in females, in which both must be simultaneously affected to produce the result. Or consider the exhibition of sex in secondary sexual characters. Each cell in the body of a female is different in its chromosomes from each cell of a male. But this does not directly lead to differentiation of the secondary characters. Once primary sex is determined, secondary development is brought about by hormones from the gonads, and by alterations in these hormones the fundamental chromosome constitution of the body can be overridden. Hence the effect of castration and the occurrence of sex reversal. The chromosomal mechanism on which this and much more depends is mechanically delicate, and, as may well be imagined, does not always effect its complicated manœuvres with complete precision. Mistakes occur and lead to various pathological results. Similar errors in the other, non-sex, chromosomes may well account for many of the individuals which do not fit the world and come to untimely deaths of one kind and another. Some of these relatively or absolutely non-viable products are also the inevitable result of particular matings of heterozygous individuals, so constituted that some recessive character, in the parents unrecognised and harmless, comes to the front. The thoughtful hygienist will find in Mr. Huxley's summary much food for reflection on nature and nurture and the lines along which hygiene must look for progress.

From a more general point of view, one of the most interesting facts brought out is that the arrangements outlined do not hold throughout the animal series. Thus in mammals and diptera—e.g., the famous *Drosophila*—the male has two dissimilar chromosomes, while in birds and moths it is the female that is the heterogametic sex, and the eggs are of two kinds rather than the spermatozoa. In insects, too, the secondary sexual characters, often extremely prominent, are due to the different constitution of the cells which form them, and are not influenced by the gonads: castration with or without implantation of a sex-gland from the opposite sex makes no difference. We have here another illustration of the great biological truth that the end and not the means is the determining factor. The end in this particular case is the production of males and females in something like equal numbers: the means by which this is attained is not always the same, any more than the means by which reproduction and maintenance of the species is always achieved by the sexual process.

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[2] The Lancet, March 29th, 1924, p. 633.

Annotations.

"Ne quid nimis."

CONCERTED CARE OF CRIPPLES.

AT the present time there are about 100,000 crippled children in this country, of whom it is believed that 90 per cent. need not have become cripples had the knowledge we already possess been put to practical use. A business-like scheme of attack was started in the county of Salop in the year 1900, and from this beginning has grown a large work all over the country organised by a central committee, of which Sir Robert Jones is chairman and Dr. F. Barry Lambert hon. secretary. This committee works in close touch with the Invalid Children's Aid Association under a joint board whose chairman is Mr. H. S. Souttar, F.R.C.S. We have just received a report of this Central Committee for the Care of Cripples (Carnegie House, 117, Piccadilly, W. 1), covering the two years 1922–23, which shows steady progress in the organising of the care of cripples in many different localities. In Shropshire the work is so far advanced that the orthopædic hospital no longer has a waiting list, and from Oxfordshire comes the cheering news that comparatively few new cases of long standing are now being discovered. There are 125 beds at the Wingfield Orthopædic Hospital, Headington, Oxford, as well as three small wards for private cases and clinics scattered over the three adjacent counties—namely, Chipping Norton, Witney, Henley, and Banbury in Oxford; Wallingford, Sandhurst, Wantage, Wokingham, and Newbury in Berks; Aylesbury, High Wycombe, and Newport Pagnell in Bucks. It is the experience of the Central Committee that wherever a clinic sets to work there is a constant and increasing flow of cripples as a result, the expectation being three cripple children per 1000 of population. Nowhere else is the work so well organised as in the two counties named, but elsewhere good beginnings are recorded. Two after-care orthopædic clinics have been opened in Cheshire, one at Chester and the other at Crewe; 257 cases were sent within the year from the adjacent counties to the Ethel Hedley Hospital at Calgarth Park, Windermere, where they were visited by surgeons from Manchester. In Essex the Walthamstow U.D.C. has provided free of rent and rates for a year the orthopædic hospital at Brookfield, served by the neighbouring public authorities. During the last two years a clinic has been opened at Hereford, and five orthopædic centres in Hertfordshire (St. Albans, Hertford, Hitchin, Letchworth, and Watford) where the massage clinics originally started for the treatment of ex-Service men are being retained by the county nursing association for orthopædic work. The Central Hospital at Longfields, Stoke-on-Trent, provides 40 beds for the North Staffordshire Cripples' Aid Society. A Red Cross Curative Post at Woking is under the surgical supervision of orthopædic surgeons from St. Thomas's Hospital. In Wiltshire a clinic is being started at Devizes and the open-air ward at Bath has already been noted in our columns. The joint committee of the two cognate associations has made it its aim to provide a clearing house for all cases sent out of orthopædic hospitals with no obvious provision for after-care. There is pressing need for new schools in the country for these children; the cripple has to learn in school hours many things which the normal child learns unconsciously, and in addition he must get a sound vocational training, when he has an 80 per cent. chance of becoming a self-supporting citizen. Unfortunately, in spite of conference with makers it has been found impracticable to standardise splints and instruments so as to reduce their cost by increased production. The ambition of the Central Committee is not to allow any preventable deformity to occur, and work on these lines is making great strides.

ELEPHANTS AND ETHNOLOGISTS.[1]

AN ethnological note, in the form of a well-illustrated quarto volume, has just been published by Prof. Elliot Smith, which, while full of learning and thoroughly documented, has the joyousness of a breezy quarrel. After all, ethnology is a very human subject, and it is very human to enjoy a quarrel. The points at issue may be briefly stated as follows. There are elephants and there have always been elephants in India, and their representation is a frequent feature of decorative sculpture in South and South-Eastern Asia. There are no elephants in America; at any rate, geology produces no evidence of their existence since primeval times. Yet in Honduras, among an imposing collection of ruins, a stela, or decorated pillar, exists adorned with animals which can hardly fail to be recognised as elephants, and bearing also the huge face of a Mongolian. Without dogmatising as to the date of this stela, it is inconceivable that sculpture upon it should have derived any decorative details from some memory of an American primeval beast. How, then, can the ornamentation on the Copan stela, in Honduras, be explained? And why does it need explaining?

The need for explanation arises from the fact that it is a dogma with a certain school of ethnologists that the civilisation which existed in America before the days of Columbus had its origin in the West, and derived nothing from Asia. Identities in primitive customs and nomenclature are justified by the theory that, it being natural for steps in human development to occur along certain lines, there must have been two developments occurring separately, one for the West and one for the East. Things may have been so, but with equal certainty they may not have been so. Why the principle of separate development should be an article of almost religious faith with one class of thinkers is not clear, but from the contents of this book we must assume that to hold a contrary view—as we happen to do ourselves—is an act of impiety. The champions of what may be called the all-America-out-of-America school argue that the ornaments on the Copan stela are not elephants at all but parrots or tapirs, or the result of pure imagination, evolved from the inner consciousness of the ancient artists.

No reply is attempted to those who think that the ornaments are the outcome of mental evolution, and those who would explain the elephants by some accidental similarity between sculptural flourishes and an animal with a trunk are also not to be argued with. No doubt the beliefs are honest, though their basis is frail. The pictures in the book appear to show distinctly the head of an elephant with, in one case, a turbaned *mahout*. The explanation which allows that the carving is intended to be an animal of some sort, and suggests that it is a tapir, does not explain the presence upon it of a turbaned *mahout*. Another explanation is that, scale being admittedly of no consequence, the decoration is a representation of a sort of parrot, the blue macaw, and this interpretation appears to be arrived at by mistaking the inconspicuous eye of the elephant for a nostril, and its ear for an eye. Looked at in this way the sculpture certainly has some resemblance to the profile of a beaked bird, but it must be remembered that there are four beasts on the stela, of which only one, and that the most damaged one, lends itself to the theory. What is the impossibility that the beasts, being elephants, should have been sculptured by persons who, though they had never seen elephants themselves, had seen representations of them, with their *mahouts*? Small articles so adorned could find their way to Honduras from India and China by the medium of adventurous Melanesians and Polynesians. This would explain everything, and requires no violent assumption, for it is known that some of the natives made long and adventurous voyages, pushing East, step by step, from island to island, while there is much evidence that the Polynesians had ways and means of reaching America which were employed some centuries before the discovery made by Columbus. What is the absurdity of this theory that should tempt those who disagree with it to be rude about it ?

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[1] Elephants and Ethnologists. By Prof. G. Elliot Smith. Woodcuts by A. H. Gerrard and K. Leigh-Pemberton. London: Kegan Paul. Pp. 136. 15*s*.

We recommend this book to all who, while valuing the lessons of ethnology, are not aware of the extreme pains necessary to comprehend the ancient messages. Prof. Elliot Smith produces a mass of evidence in support of the view that the influences of Asia might be found in the remains of the pre-Columbian civilisations of America, and Mr. Gerrard and Mr. Leigh-Pemberton have coöperated in a series of remarkable woodcuts. The testimony cannot be pushed aside as supporting " an extravagant hypothesis, long since relegated to the rubbish pile of scientific discords." Such an attitude towards scientific opponents is not to be commended.

ACTION OF TESTICLE ON OVARIAN GRAFTS.

Drs. A. Lipschütz and H. E. Voss have carried out some interesting experiments, described in the *Comptes rendus de la Soc. de Biologie*, in order to throw light on the mechanism of the inhibitory action exercised by the testicle on experimental glandular hermaphroditism. It has previously been shown that if ovarian grafts are made in an intact male guinea-pig no enlargement of the breasts occurs, the effect of the grafts being inhibited by the action of the testes. Lipschütz and Voss have, however, now found that if previous to the grafting the lower pole of the epididymis be removed so as to convert the testicles into fragments having no connexion with their excretory ducts, the inhibiting action of the testicles is prevented, with the result that the ovarian transplantation produces a marked development of the breasts. This at first sight would suggest that the inhibiting action exerted by the testicles on the ovarian grafts depends on spermatogenesis rather than on the interstitial cells. The experiments, therefore, as far as they go, are in harmony with the view that is held by many investigators, that the hormonal function of the testes is not entirely centred in the interstitial cells. The epididymectomy carried out by Lipschütz and Voss is similar in its effect on spermatogenesis to ligature of the vas. It must, however, always be borne in mind that regression in the tubules does not occur immediately after ligature or epididymectomy, but only after an interval has occurred. Intact tubules, as Mr. Kenneth Walker pointed out in an article published in THE LANCET of Feb. 2nd, are found in the human subject as long as three months after vasotomy. Care must, therefore, be exercised in interpreting Lipschütz's experiments as a proof that the inhibitory action exercised by the testicle on an ovarian graft is entirely dependent on the existence of spermatogenesis.

SCHISTOSOMIASIS.

THE scattered literature on the subject of the schistosomiasis of the Far East, the disease produced by the trematode, *Schistosoma japonicum*, has been collected and coördinated by Drs. E. C. Faust and H. E. Meleney in the Monographic Series of the *American Journal of Hygiene* (No. 3, March, 1924), where they have supplemented and embellished our knowledge of the fascinating subject with a considerable amount of original work. This monograph consists of some 339 pages with a comprehensive index, and is abundantly illustrated with drawings and microphotographs. There is included an appreciation of the historical aspect of the schistosomiasis problems which was badly needed, and in this survey the fine work of the earlier Japanese investigators is given due credit. Other sections deal with the morphology, biology, and life-history of *S. japonicum*, its development with the molluscan host, the cercaria stage of the fluke, its development within the definite host—all the stages being well depicted by means of accurate comparative outline drawings and photographs. The migration of the fluke in the human body, the pathological anatomy of the disease, the clinical and therapeutical aspects are all passed under review, while the portions dealing with the biology of the intermediate hosts, the geographical distribution of the disease, and the question of its efficient prophylaxis are all welcome. The monograph contains two important appendices. The first, a zoological study of the molluscan hosts of *S. japonicum*, is from the pen of the late Dr. Nelson Annandale, F.R.S. elect, and must have been completed shortly before his death. Emanating from such a source, and from the zoological survey of India and the Indian Museum, Calcutta, this contribution is quite authoritative. The accurate description of the snails is illustrated with some fine illustrations of their morphology, and from this it appears that the correct nomenclature of the intermediate hosts is *Oncomelania*, Gredler (1881), of which there are three species—*nosophora*, *formosana*, and *hupensis*—which act as intermediaries in various parts of the Far East. The genus *Blanfordia* is now known to be quite distinct. The other appendix contains a full bibliography historically arranged.

GOITRE IN BRITISH COLUMBIA.

GOITRE affecting animals in British Columbia has a seasonal incidence, being more prevalent in late winter and early spring when the fresh green food of summer is not available. An article by Dr. W. D. Keith, of Vancouver, in the April issue of the *Canadian Medical Association Journal*, draws this and other interesting conclusions from his own personal observations. The incidence of goitre in the valley which he studied has disappeared entirely following on the use of iodine. Sanitation appears to play little part, for in the Indian Reserve, where conditions seem most favourable for spread of contagion, no goitre was found either among live-stock or human beings. But goitre was endemic in the Pemberton Meadows, inhabited only by white men during the last 30 or 40 years on a virgin soil with remarkably pure water-supply. Certainly, the iodine-deficiency theory of goitre is strongly supported by the evidence which Dr. Keith brings forward. There may be other factors. In a recent British Medical Association lecture [1] Dr. R. McCarrison still lays special stress on one of these—namely, the continued infection of the bowel by way of polluted water. But wherever goitre arises in the absence of bowel hygiene, Colonel McCarrison would now assume insufficiency of intake of iodine in food and water. The method of prevention of goitre by iodine, he states, is at once simple, rational, cheap, and devoid of ill consequences.

THE ULTIMATE RESULTS OF RADICAL OPERATIONS FOR MIDDLE-EAR DISEASE.

IT is a disappointing feature of radical operations for middle-ear disease that they so often leave a serous or purulent discharge which, though it may not be a serious danger, is, at any rate, a blemish and a social hindrance. The causes of this sequel are various ; it may be that the operation has not been radical enough, some of the diseased bone having been left behind, or, as happens frequently, the operator has not succeeded in providing the cavum tympani with an epithelial lining suited to its modified functions. Yet another important cause of a persistent discharge is neglect of after-care, of that periodic supervision which patients should enjoy for at least a year after a radical operation. It is this lesson in particular that Dr. P. Henius and Dr. H. I. Schousboe emphasise in the last number of *Acta Oto-Laryngologica* (1924, vi., fasc. 1 and 2). In the autumn of 1922 they investigated the fate of the 301 patients on whom a radical operation for middle-ear disease had been performed in the period 1901–20 in a Danish hospital. In 19 of these cases the operation was performed on both sides, and in 65 cases cholesteatomata were found. Of the 13 patients who died in hospital, as many as 12 showed intracranial complications before the operation. Among the 288 patients who left hospital alive, there were 234 about whom information was obtained in 1922. Eleven were found to have died, but in no case was the cause of death connected with the operation. Of the 135 patients who submitted to a re-examination in hospital, 15 had been operated on for middle-ear disease on both sides. There were thus 150 operation results to check, and only in 67, or 45 per cent., was the operation wound found to have healed completely. Among the remaining 83 cases of imperfect healing, a mucous discharge from the Eustachian tube or from the imperfectly healed cavum tympani was the most common defect. In other cases there was a comparatively profuse and often purulent discharge from the cavum tympani or other parts of the field of operation where granulation tissue and, at a few points, denuded bone were found. Some of the worst cases, from the point of view of healing, were also the worst cases from the point of view of elementary cleanliness on the part of patients whose indifference and inertia were mainly responsible for the accumulation of wax and epithelial debris. In many cases a short course of after-treatment effected complete healing of the operation wound, and the authors insist that it would be well if every patient undergoing a radical operation for middle-ear disease were to be instructed to report periodically, say once or twice a year, for supervision, and, if necessary, a short course of after-treatment.

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[1] Brit. Med. Jour., June 7th, p. 989.

A JOURNAL OF INFECTIOUS DISEASES.

Prof. R. Kraus, of Vienna, is editing a new journal, with the title of *Seuchenbekämpfung*,[1] which has as its object to keep the general practitioner and veterinary surgeon in contact with recent developments of experimental medicine, especially in its application to infectious diseases, such as vaccine therapy, chemotherapy, protein therapy, and new methods of prophylaxis. The literature on this subject is so vast, so difficult to appreciate critically by the non-expert, frequently so contradictory, that the general practitioner may well be excused if he lets his innate conservatism get the better of him. The aim is to present positive achievements which are ripe for application in general practice in the form of brief and clearly written articles by authorities of standing. The first number opens with an article of ten pages by Dr. J. Gerstmann, on the Malarial Treatment of General Paralysis. Details of the treatment are given and the conclusion is reached that "the dogma of the incurability of this disease has been overthrown." This is followed by a paper from Prof. Pirquet's clinic, on the present state of diphtheria prophylaxis. Prof. Przibram has a paper on the diagnosis and ætiological treatment of bacillary dysentery. Prof. Kraus writes in favour of the curative and prophylactic value of anti-tetanus serum. Other papers in this number deal with the technique of the production of antitoxic sera, the technique of collecting specimens for bacteriological and serological examination, the experimental production of cancer by tar, the animal epidemics in Jugoslavia, and the methods employed in fighting them. The last paper is a short note by Prof. Kraus dealing with certain ill-effects encountered in immunising sheep against anthrax. The papers are clearly written, and if the standard set by this first number can be maintained the journal will certainly be a useful addition to current medical literature. It was apparently conceived by Prof. Richard Paltauf, whose death, recently recorded by our Vienna correspondent, removes one of the last surviving pioneers of bacteriology and serology. His labours, which were devoted particularly to the application of bacteriological discoveries and methods to practical medicine, have gained for him a distinguished place in one of the most remarkable periods in the history of medicine.

AN OVERCROWDED MENTAL HOSPITAL.

THE impression that certifiable mental disorder in Ireland is increasing is confirmed by the annual report (for 1922) of the Ballinasloe Mental Hospital, which has just reached us. Here the number of patients increased in the course of the year by 49 to a total of nearly 1500, although the medical staff consists of three members only. The inspector's report opens with the sentence, "This mental hospital is greatly overcrowded." Apparently the dormitories being full of beds, corridors are also being used as sleeping apartments. This report contains other serious criticisms; food and clothing were of bad quality, the grounds were not well kept; "the attendants' rooms were not in a proper state of order and cleanliness"; the women's exercise grounds were entirely inadequate; more patients could have been usefully employed, some of those who were working had been hired out to farmers, "a practice objectionable on more than one ground." Two suicides and two fatal and many non-fatal accidents are recorded; various infectious diseases, including typhoid, have been prevalent; the deaths from tuberculosis numbered 14. No mention is made of therapeutics. It is to be feared that the bad conditions reflected in this report are only too common in Irish asylums, and are due directly or indirectly to financial difficulties. The efforts of the staff might be expected to produce certain improvements, but initiative may well be discouraged by the impoverished aspect of the inadequate buildings in which they work.

RAT-BITE FEVER.

Dr. Paul A. O'Leary,[1] associate in the Section on Dermatology and Syphilology of the Mayo Clinic, states that since rat-bite fever was first described by Millot-Carpentier in 1884 about 140 cases have been recorded. The disease has occurred in all parts of the world, but is naturally most prevalent in those countries where rats are numerous, such as Japan, England, France, and the United States. In 1915 Futaki described, under the name of *Spirochæta morsus muris*, an organism which he had recovered from rats and from patients suffering from rat-bite fever, and therefore regarded as the cause of the disease. Hitherto, however, only Japanese observers have succeeded in isolating this organism in cases of rat-bite fever in man, and other organisms have been regarded as of ætiological importance, such as a streptothrix, by Tileston, Schottmüller and Blake, a sporozoön by Ogata, and a diplococcus by Douglas, Colebrook, and Fleming.[2] Dr. O'Leary, who records two illustrative cases, pays special attention to the dermatological manifestations of the disease, which he classifies under the headings of roseola, indurated erythematous plaques, lesions of the mucous membranes, and alopecia. The roseola consists of large reddish-blue or purple macules scattered diffusely over the lower extremities, neck, and face, in contrast with the roseola of syphilis which is more pronounced on the trunk. The macular lesions usually appear with the first attack of fever and rapidly undergo involution, leaving brown pigmented patches which may remain for several weeks, but do not usually persist throughout the disease. The most characteristic lesion of rat-bite fever is the indurated bluish-red or livid plaque with a lighter coloured concentric zone just within the margin. The lesions are widely disseminated and vary in size. The larger plaques are, as a rule, definitely indurated, and may be surrounded by smaller non-indurated macules. With each exacerbation of fever the older or fading lesions become more distinct, and new lesions may appear, subsiding in their turn with the fall of temperature. Œdema of the skin is sometimes a prominent feature, its extent depending on the situation of the indurated lesions. Coarse, flaky desquamation follows the involution of the erythematous plaques. The skin lesions become less numerous and distinct as the disease progresses, and disappear altogether as it subsides spontaneously or is arrested by intravenous injection of neo-arsphenamin, as occurred in one of Dr. O'Leary's cases.

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[1] Verlagsbuchhandlung M. Perles, Wien I., Seilergasse 9 A double number two-monthly. Subs. 4 Swiss francs a year.

[1] Archives of Dermatology and Syphilology, 1924, ix., 293.

[2] THE LANCET, 1918, i., 253.

DR. EDMUND SMITH'S RETIREMENT.

HIS colleagues in the public health service will have learned with regret of the impending retirement through ill-health of Dr. Edmund Smith, medical officer of health for the city of York. Dr. Smith was York's first whole-time medical officer, and the quarter of a century during which he has held office has been a time of great progress in public health matters. During his first year there was an extensive epidemic of typhoid fever in York, which led to the gradual abolition of the conservancy system and the improvement of the sewers. Voluntary notification of pulmonary tuberculosis was adopted at an early date, and a complete scheme for dealing with tuberculosis has since been built up. An excellent maternity and child welfare scheme has come into being as the result of whole-hearted coöperation with the York Infants' Welfare Association. In his report for 1922 Dr. Smith told of the opening of the new maternity hospital at Acomb Hall, a building admirably adapted for the purpose with accommodation for some 40 patients. One of the principal features of public health work in York has been the happy blending of municipal and voluntary effort, in no small degree due to the tact and enthusiasm of the medical officer of health. Comparison between the death-rates in the year of Dr. Smith's appointment (1900) and the last year for which figures are available (1923) shows that the general death-rate has fallen from 20·3 to 10·3; the tuberculosis death-rate from 2·10 to 0·86; the infant mortality-rate from 211 to 51. We are not surprised to learn that the cause of Dr. Smith's retirement has aroused deep sympathy on the part of the citizens whom he has served so faithfully.

WE regret that by an oversight the name of Surgeon Rear-Admiral Charles Marsh Beadnell was omitted from the list of Birthday Honours in our issue of June 7th. Admiral Beadnell received the C.B., Military Division.

THE annual dinner of the Federation of Medical and Allied Services on June 20th will be held in the Crown Room at the Connaught Rooms, Great Queen-street, W.C. This alteration of place has now become necessary owing to the applications for tickets having greatly exceeded the accommodation available at the Langham Hotel.

Dr. Arthur Hurst will deliver the Savill (Memorial) Lecture at the house of the Royal Society of Medicine, 1, Wimpole-street, W., on Thursday, July 3rd, at 5 P.M. Dr. Hurst has chosen Migraine as his subject, and the chair will be taken by Sir William Hale-White, President of the Royal Society of Medicine. These lectures were founded in connexion with the West End Hospital for Nervous Diseases. Any member of the medical profession will be admitted on presentation of his card.

AT a meeting of the Board of Governors of the McGill University, Montreal, on Thursday, June 5th, it was announced that the sum of half a million dollars had been granted by the Rockefeller Foundation to the Medical Faculty of the University for the establishment of a university medical clinic in coöperation with the Royal Victoria Hospital. We also learn that Dr. J. C. Meakins, Christison professor of therapeutics at the University of Edinburgh, has been appointed director of the clinic.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXV.

TREATMENT OF ACUTE GONORRHŒA IN THE MALE.*

GONORRHŒA in the male has an incubation period of 3–21 days; the average is 5, any time after 10 is rare. The earliest symptom is a slight gumminess of the meatus, associated with a sense of chafing. This appears usually on the second day after contact, and, if a smear is then taken, gonococci are present. This is an important fact not generally known, most practitioners waiting until pus shows on the third to fifth day. The inflammation at this stage is still confined to the squamous epithelium of the fossa navicularis, where the gonococcus can lead only a precarious life. It has not yet spread to the columnar epithelium of the urethra proper, where the organism can speedily burrow between the cells, invade the racemose glands of Littré, and establish itself firmly. The importance of recognising the gonococcus thus early, and before pus formation, is due to the fact that at this stage it is still possible occasionally to abort an attack.

Abortive Treatment.

The most successful method is that of Ballenger. After the patient has urinated, the glans and meatus are cleaned with spirit, and 20 minims of 1 per cent. protargol, or 1/2000 collosol silver, is instilled into the anterior urethra with an ordinary hypodermic syringe. The lips of the meatus are then closed, and sealed with a strand of cotton-wool soaked in collodion flexile. The penis is then held erect until the seal has dried. After three hours this seal is removed with acetone, the patient meanwhile having been instructed to drink 1½ litres of Contrexéville or barley water. The same manœuvres are repeated six hours later, and, if pus formation has not started, continued on the two succeeding days. The method probably acts by increasing osmosis. Its success can scarcely be due to the strength of the gonococcicide used. In private practice a small proportion of first-attack cases can be aborted in this way, and it is therefore worth the attempt, particularly in married patients. In hospital cases it seldom succeeds. Carelessly used it aggravates the attack, especially in relapse cases. The points to remember are: (1) Not to use more than 20 minims—the normal capacity of the urethra. (2) Not to use silver nitrate, as is often done—it is a dangerous drug to seal up. (3) Never to attempt the method if pus is actually present—damming up the discharge in this way only aggravates the condition.

Treatment of an Established Case.

When definite pus develops, the patient should be given a saline purge, and the bowels regulated throughout the attack. This appreciably diminishes the chance of posterior spread. A suspensory bandage should be worn, and the penis carried in a bag containing medicated cotton-wool to catch the discharge. Riding, cycling, dancing should be interdicted, all alcohol prohibited, spicy foods and coffee deleted from the diet. Urinary antiseptics are of no value in the acute stage of the disease. Sod. bicarb., gr. xx. quartis horis, to reduce acidity, may be required if micturition is painful. Bromides by the mouth and suppositories of atropine, gr. 1/75, should be prescribed if painful erections occur.

The purulent discharge is attacked in three ways: (1) by chemotherapy, (2) by vaccines, (3) by irrigations.

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* An article in this series on Acute Gonorrhœa in the Female will appear in the next issue of THE LANCET.

Chemotherapy.—Here the drug *par excellence* is manganese butyrate. It should be given by intramuscular injection into the buttocks on the first and fifth day of the discharge, in doses of 1·0 c.cm. and 1·5 c.cm. of a 1 per cent. solution. Extremely gratifying results follow its use, the acute stage of the disease being materially lessened. Only two injections should be given—a third aggravates the condition.

Vaccines.—These are of great value in the acute stage of the disease, and in my experience clinical evidence is overwhelmingly in favour of vaccines of the non-toxic variety. The Lock Hospital vaccine is prepared in a strength of ten thousand million to the c.cm. It can be given every five days. The initial dose is 0·25 c.cm., increasing to 0·5, 0·75, 1·0 c.cm., and continuing at 1·0 c.cm. whilst required. A negative phase does not appear to be produced, and complications such as epididymitis are rarely seen if this form of therapy is used.

Irrigation.—This plays an important, but subsidiary, part in the treatment of the disease. If the urethra were a simple tube without glands it would be an easy matter to devise some wash-out method which would speedily cure the condition. Unfortunately Nature does not work in this way, and, by the time the discharge is in evidence, the gonococcus has already penetrated below the surface of the mucous membrane, invaded the glands of Littré, and entrenched itself well beyond the reach of any antiseptic that the urethra will tolerate in a strength sufficient to penetrate. Failure to recognise this fact, and persistence in using irrigation to the point of irritation, is responsible for many of the prolonged cases of urethral discharge which are so common in every clinic to-day. Irrigation should be used mainly for the mechanical purpose of washing out accumulations of pus. It is the increase in antibodies produced by the natural reaction of the body, and augmented by the use of vaccines, which causes the condition to clear up. Many drugs have been used for the purposes of irrigation. Practical experience speedily reduces the list to some five or six. These include: permanganate of potash 1/8000 to 1/4000, zinc permanganate 1/8000 to 1/4000, oxycyanide of mercury 1/6000 to 1/3000, acriflavine 1/4000 to 1/2000, silver nitrate 1/12000 to 1/6000. Each of the drugs enumerated has certain advantages. Permanganate of potash is the more generally useful. Zinc permanganate is valuable when an astringent action is required in the resolving stages, when the mucus output of the glands of Littré needs checking. Oxycyanide of mercury is valuable when the urine becomes clear with threads, in mild recurrences, and in cases where secondary organisms are more prominent than the gonococcus in the discharge. It should never be used if the patient is taking iodide of potash by the mouth, as intense strangury is caused by the combination in the urine. Acriflavine is very useful in early cases when the urethra is particularly irritable and permanganate of potash cannot be tolerated. It tends, however, to make the mucous membrane very sodden, and should therefore be alternated with zinc permanganate every three days. Indeed, it is a useful practice to ring the changes on whatever drugs are being used. Silver nitrate has its chief value in the later stages when a posterior urethritis is clearing up too slowly.

All irrigations should be given at least once a day at first, and then at gradually increasing intervals as the urine clears up. The temperature of the lotion should be 105° F., and the height of the irrigator about 2 feet above the patient's urethra. Two litres is the usual amount required. A syringe should not be recommended unless irrigation is impracticable. If it must be used, it is required three or four times a day, should be given in the erect posture; and the greatest possible care taken not to force the sphincter.

The question whether the anterior urethra *only* should be washed out at first, or the bladder irrigated right from the start is still a disputed one. Logical treatment suggests anterior irrigation only for the first week, and if no signs of posterior implication then show, the continuance of this procedure. Sixty per cent. of cases are said to develop posterior urethritis within the first three weeks. This I think is much too high an estimate. It certainly does not occur to that extent in the manganese-vaccine cases. Posterior urethritis is indicated in acute cases by frequency, precipitancy, pain, temperature, and usually a decrease in the discharge with some hæmaturia. Such a syndrome cannot be missed; but, unfortunately, in some 50 per cent. of cases the patient complains of nothing more than a little frequency. It is for this reason that many competent urologists recommend bladder lavage from the start; and although I do not recommend this, I must admit that in my experience there does not appear to be any extra risk involved in the procedure, provided that the anterior urethra has been thoroughly irrigated beforehand to get rid of all visible discharge. To irrigate the bladder the reservoir should be 5 feet above the urethra, and the patient instructed to urinate against the pressure of the incoming fluid. With a little practice it will then be found that the sphincter can be taught to relax automatically.

Acute Posterior Urethritis.

Symptoms of acute posterior urethritis should be treated, if possible, in bed; irrigations stopped, hot sitz baths prescribed, and the urine rendered alkaline with sod. bicarb., gr. xx. quartis horis. Suppositories of atropine gr. 1/75 should be given to prevent extension to the epididymis. Only after the condition becomes quiescent should irrigation be resumed. When discharge is lessening down the prostate should be examined per rectum; but massage is not indicated in the inflammatory stage. If the prostate is painful and a little swollen to the touch, manganese butyrate, if not already given, should be tried in a dosage of 1 c.cm. intramuscularly. If, unfortunately, abscess development occurs, it is bad practice to pass a sound in the hope of rupturing it into the posterior urethra—an intractable posterior urethritis generally follows. If it is found pointing towards the rectum, resist the temptation to incise—you will only add a coli infection to the already existing gonococcal one, and may also establish a fistula. The correct procedure is to make a transverse incision in the perineum and drain. Epididymitis quickly resolves under intramuscular injections of contramine 0·25 g., and 10 per cent. guaiacol ointment locally.

Whilst under treatment the urine should be inspected at every visit to gauge the progress of the case. The simplest routine method is Thompson's two-glass test. In this the patient passes his urine into two glasses, one or both of which will show pus whilst discharge is present. As long as the second glass is clear the posterior urethra is probably not involved.

Instrumentation.

When both are clear, with or without threads, the acute stage is over. It is when this stage has been reached, and not till then, that intra-urethral instrumentation is permissible. Diagnostic bougies, sounds, dilators, the urethroscope are all contra-indicated as long as the urine is muddy with pus or muco-pus. Enormous harm has been done in recent years by over-instrumentation, and invaluable instruments such as the urethroscope discredited in consequence.

The Standard of Cure.

No standard of cure in the male is complete that does not include a complete endoscopic examination of the urethra, the passage of a full-sized sound, and the microscopic and cultural examination of the urine before and after prostatic massage on several occasions spread over some months. A large proportion of so-called second and third attacks are merely relapses from a first attack of gonorrhœa that has never been adequately treated because never properly examined for cure.

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Special Articles.

A REVIEW OF THE PRESENT POSITION OF THERAPEUTIC IMMUNISATION.

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VACCINE therapy, the attempt to treat active disease by the subcutaneous injection of killed cultures of the causal micro-organism, has now been before the medical profession for a very considerable period. It has been tried in almost every conceivable malady in one form or another, and in many conditions but for many observers judgment is still suspended as to its actual value. A like phase has existed for a whole host of therapeutic agents, and in recalling these forgotten pages of their history the cynic may find some gloomy satisfaction in noting how repeatedly the final judgment has allowed to them but little utility, or utility in only a very restricted sphere. To-day it is to speak with great moderation to say that the hopes and expectations of the earlier days of vaccine therapy have not been realised. Fundamentally, the doctrine lying behind this mode of treatment has depended upon the specificity of micro-organisms as the causal agents of disease; and in practice this belief in specificity has been pushed to the extent of insistence upon autogenous vaccines in the belief that, for example, the gonococcus from one person's urethra in some subtle way differs from the gonococcus in a second person's and that the autogenous strain is accordingly preferable from an antigenic point of view. This belief, let it be said, does not always rest upon any sound experimental basis. Clinical experience has thrown doubts upon some of these fundamental conceptions. It has been a recurring experience that stock vaccines sometimes give as good, and in many cases an even better, result where good results follow upon vaccine treatment than the autogenous variety and, in fact, that there is in the whole matter an element of uncertainty, difficult to explain if the guiding theory be correct, which makes each application of vaccine therapy an experiment in itself.

Other facts, brought forward from time to time, raise more serious doubts in the minds of their users as to the mode of action of vaccines, and call into direct question the correctness of the theory upon which their employment has been based. Amongst these we may cite the abundantly good results reported from the use of substances derived from organisms by their chemical treatment: partial vaccines, detoxicated vaccines, and residual vaccines, as they are called by their various advocates. These are for the most part prepared by dissolving the bacterial bodies and precipitating a majority of the protein from the solution by means of some protein precipitant. Such substances are said to have antigenic properties and to produce good results in the conditions in which they have been employed. With the benefits obtained we are not immediately concerned, but, if the facts are as stated, they direct a serious blow at the doctrine of specificity and would seem to dispose altogether of the ideas underlying the advocacy of autogenous vaccines. Yet more, repeated accounts are met with in which credit is attributed to vaccines, which are avowedly and altogether non-specific in their action—a vaccine prepared from one organism being productive of good results in conditions definitely due to another. In view of the growing accumulation of fresh facts, directing light upon one or other facet of this many-sided problem, it seems well to summarise and re-survey the whole question in an endeavour to arrive at the present position of knowledge in this field. Within the last few years certain fresh ideas have been put forward which make this all the more necessary, since they introduce conceptions radically different from those which have been so firmly established for a number of years.

The History of Artificial Immunisation.

To go back over the history of artificial immunisation we begin with Jennerian vaccination as the first really successful production of immunity by a modified virus; it is a preventive method, and one which goes out to meet, half-way, the previously practised inoculation. Pasteur's work, from the point of view of the present problems, concerned itself with anthrax, fowl cholera, and rabies, and was in each case directed towards prophylaxis. It adhered to the earlier work of Jenner in the very important principle of producing immunity in the *uninfected subject* by means of a known and living virus, but one attenuated beyond that degree of virulence which is capable of initiating the actual disease. This method, which as far as we can see most closely approximates to the means productive of the most solid variety of immunity known, recovery from the actual disease, is therefore the one which of all possible methods is most likely to convey a substantial degree of resistance to subsequently encountered infection. The step from these procedures to vaccination by means of killed cultures is therefore a very great one. In the new field, which although entered earlier by several investigators, is especially the domain of Sir Almroth Wright, and in which the most prominent investigations have been the delicate in vitro experiments which are peculiarly his own, the application of the principles which this method contains has been widely made with varying degrees of success. Success has been most pronounced in the case of preventive inoculation, notably against typhoid fever, where it has been unequivocal. In another field, however, that of vaccine therapy properly so-called, the attempt not to prevent but to treat the disease in an infected subject, there is an even further departure from the underlying ideas of the Pasteurian method, and here the results obtained have been very uneven and often disappointing. Much water has run under many bridges since the first introduction of vaccine therapy, and in the interval an immense amount of work has been expended in the endeavour to elucidate the mechanism of bodily immunity. This work has given us, in the form of a by-product, certain diagnostic tests of the greatest value in clinical medicine, such as the Widal and Wassermann tests, but there has been little real accretion to our knowledge of the principles of resistance and immunity from the results of workers in this field. Recently certain fresh ideas, bearing upon this problem and consequently upon that of its artificial stimulation, have been put forward which are suggestive.

Tissue Immunity.

One of these is the conception of "tissue immunity," which has been especially brought into prominence by the labours of Besredka, and has received a good deal of indirect support from various sources. As the outcome of experiments upon mouse infections with typhoid Besredka concluded that the only really effective way of achieving immunity in such animals is by bringing the organisms into actual and intimate contact with the normal seat of infection, the alimentary mucous membranes, and that whilst subcutaneous injections gave an extremely mediocre degree of resistance a sublethal infection by the alimentary tract gave a substantial and lasting one. It will be seen that these ideas carry us back very close to the principles of Pasteurian vaccination, which have been in some danger of being lost sight of. This hypothesis has been developed in two directions. Firstly, in practice, a method of prophylactic inoculations has been involved in which the vaccines are administered by the mouth, with special precautions to ensure as far as possible an intimate contact between them and the mucosal cells; a method which it is claimed is applicable to the prevention of diseases of intestinal origin. The procedure is as yet on its trial, but encouraging reports are appearing from France, and Ch. Nicolle, in a few concise experiments, appears to have demonstrated its efficacy in affording protection against dysentery in the human subject. Here, indeed, if its success is proved its greatest sphere of utility should lie, since the violent reactions which the subcutaneous injection of dysentery bacilli occasion practically prohibit inoculation by this route. In the second place, Besredka's work lends support to the theory that in disease immunity is often a special function of a particular tissue rather than one implicating the body cells generally, as we have been perhaps too prone to think, and hence, in the production of artificial immunity, we should proceed in accordance with this principle. In other words, that since certain diseases produce their most striking lesions in given tissues the process of artificial immunisation should be directed towards that tissue and the immunising agent introduced into it, in the case of typhoidal disease into the intestine and its mucosa, in the case of anthrax into the skin; a principle which appears to have long been practised, albeit unwittingly, in the case of vaccination against small-pox. Some direct support for this suggestion comes from the results of experiments upon anthrax, which have shown that the guinea-pig, an animal commonly regarded as very susceptible to this disease, is in reality relatively insusceptible provided that the organisms are introduced into the deeper tissues and infection of the skin is avoided. In accordance with this finding attempts to immunise by subcutaneous injection, even when pursued with the greatest care and persistence, confer, in the case of these animals, only a slight resistance to the infection, but if graduated intradermal inoculations be made a very substantial immunity can be established. This contention of the autonomy of different tissues in regard to disease, and the possibility of the production of local immunity at the site of normal invasion, is an engaging one. Levaditi's experimental work upon encephalitis, herpes, and allied conditions, and Marie's experiments upon vaccinia have tended towards the same conclusions, and in certain cases may extend them to embrace structures related by development from the same embryonic layer. In passing, one may note that the single affection in which it is most generally agreed that the subcutaneous injection of vaccines is most often beneficial, furunculosis, is an integumentary one.

Stimulation of Specific Means of Defence by Non-specific Substances.

Whilst these results may go to show that we have been too readily satisfied with subcutaneous injections in our attempts at therapeusis by vaccines, and to demand a reconsideration of route as well as of type of substance introduced, other work has been going forward which is of special interest in relation to both of these matters and particularly in pointing to the possibilities of the production and provocation of non-specific means of defence. One must readily realise that, from the point of view of bacterial infections, the body is provided with both specific and non-specific, or general, means of defence. Phagocytosis is essentially non-specific: available against the majority of bacterial invaders. The more complex serological reactions are essentially specific: developed only in response to the presence of individual types of organisms. It is to be remembered that these latter are only demonstrated by such techniques as we possess, and we have no knowledge as to whether it is an enormous or a relatively slight concentration which can be revealed by the methods available. It is quite possible that many of these antibodies may be normally present but in insufficient concentration to be shown by the means we can dispose. Although most of the serological reactions are, as we see them, essentially specific, it must not be forgotten that non-specific means of defence most certainly exist in the body fluids and that we have perhaps been led, by the attractiveness of the opsonic theories and the usefulness of the serum tests, rather to lose sight of these means of defence and to forget the possibility of stimulating them by other ways than by vaccines derived from the causal organisms. There are, therefore, two possibilities to be considered. One is the stimulation of the specific means of defence by non-specific substances; the second is the stimulation of more generally applicable, non-specific, protective substances and the methods of doing this. With regard to the first case, striking evidence of its possibilities has been brought forward by Walbum and Mörch in Madsen's laboratory. It has been found that the intravenous injection of manganese chloride provokes, in horses used for the production of diphtheria antitoxin, a marked augmentation in the amount of this substance in the blood; this takes place within a few hours of the injection; similar experiments upon the production of agglutinins have given results of a like nature. It is perhaps significant to recall at this juncture the present widespread use of colloidal manganese in the treatment of localised septic foci.

Stimulation of Non-Specific Protective Substances.

In connexion with the second of the two therapeutic possibilities enumerated above, some very striking results recently obtained by Sir Almroth Wright call for attention. Wright has found that the addition of a culture of organism to blood, outside the body, causes a liberation of anti-substances, occurring rapidly and at once, which results in the blood becoming highly bactericidal. Following out these observations, it has been further found that the same phenomenon takes place where the vaccine, in appropriate dose, is injected into the blood-stream of a living animal or man. The result is a sudden increase in the bactericidal power of the blood, which is general in nature and effective for other species besides that of the organism used in making the injection. There is here, therefore, a reaction of a type quite different from those with which the serologist usually works. It is no question of a slow development of agglutinins, complement-fixing bodies, or the like, in response to a specific infection, but a rapid and immediate outpouring of bactericidal substances available for the destruction of a number of bacterial species. Wright holds that these substances are derived from the leucocytes, a source of origin for all humoral anti-substances invoked by Metchnikoff many years ago; and it may be relevant to recall here the marked effects produced upon the leucocytes by injection of peptones and a variety of other substances, as well as the maximum degree of the same phenomenon which is seen in shock associated with intravenous injections in anaphylaxis. This line of thought may link up these phenomena with the striking results claimed from time to time, especially during the war, for intravenous injections of eusol, alkalies, and other substances, in desperate cases of sepsis, and to suggest that these bodies produce their beneficial results not by any direct action upon the bacteria but by their action upon the leucocytes.

Non-Specific Protein Therapy.

Non-specific protein therapy, which has its vogue in therapeutics, is probably another example of the same phenomenon. These varied observations may seem on casual inspection to be isolated and unconnected, but to the writer it seems that there is a general underlying idea running through them all, and that the mechanism of bodily defence and recovery is in process of being made more plain by such various investigations which from different sides are converging upon the same central idea. They are nearly all as yet in the tentative stage, and require a great deal of further development and classification, but they are tending towards knowledge and towards the ultimate removal of the easy reproach, from which the vaccine user cannot yet escape, of "injecting a substance, of which you know little, into a body of which you know less."

HEALTH OF THE NAVY IN 1921.[1]

EIGHTEEN months ago, when we examined the last of these reports,[2] that for 1915, we hoped soon to see that for 1916. Now, 18 months later, we get the report for 1921, and notice that the Admiralty has decided to cancel the preparation of reports for the years 1916–20. This regrettable decision interrupts a series which, completed by the volumes to 1929, would have been continuously published for 100 years; moreover, there are reasons why the decision is particularly unfortunate at this time. The price of the Blue-book has fallen a little; the last cost 7*s.* 6*d.*, this, though slightly larger, costs 6*s.* 6*d.*; smaller type for the tables might still further economise space and paper. The interesting comments on the occurrence of diseases from the reports of medical officers are cut down drastically this year; the statistics have been rearranged in accordance with the 1918 nomenclature of diseases; cases of syphilis are now classed as "first" or "second record," and pneumonia is named "pneumococcal infection (lungs)," and gonorrhœa becomes "gonococcal infection, acute." The "total force" employed and reported upon had fallen from 236,500 in 1915 to 110,700 in 1921. Wounds received in action were 15, eleven among the marines in Ireland, the other four in the Yang-Tse River; 57 men were lost in the distressing disaster to submarine K5.

For every 1000 men employed there were 583 cases of disease or injury (91 of them injuries), with 23·2 invalidings and 3·58 deaths. Venereal disease has greatly increased both in number of cases (113 against 67) and duration of each case (26 days against 14). There is also greater loss of service this year from influenza (31 cases per 1000 men), malaria, Mediterranean fever, and scabies. About the same are the infectious fevers, tubercle, diseases of the eye, ear, and nervous system (though there are only half the cases of insanity that occurred in 1915, during the war), while meningococcus infection has almost disappeared, and enteric fevers, pneumonia, rheumatic fever, and diseases of the digestive system (tonsillitis is one), and of the skin are all materially less. On the whole, a very considerable reduction of the number of cases of illness in the Navy, apart from venereal disease, since 1915. The "sick daily" figure has risen from 22 to 25 for every 1000 men, but if venereal cases are in each year deducted, there is really a fall, from 19 to 17. In other words, the sickness for which medical officers are responsible has considerably decreased.

Invalidity in Various Groups.

The naval forces as arranged in the tables fall naturally into three great groups, the fleet at home, the Atlantic Fleet (29,050 men); the Fleets Abroad (26,950); and the Home Station (54,700), which, with some ships, includes also the depôts and the training establishments. These all together constitute the "total force" (110,700 men), from which are still excluded for no obvious reason the 5480 men at Marine Headquarters, whose particulars of illness are given in two separate and not entirely consistent tables on pp. 174 et seq. and p. 188.

In the great groups mentioned the highest proportion of loss of service by illness is shown by the fleets abroad, which suffer more than the others from venereal disease and injuries, while the healthiest is the Atlantic Fleet, with less than half the complement coming on the sick-list during the year, and an average loss of service of 6·8 days per man. The most important health statistics of these groups can be seen in the accompanying table, though it must be remembered that all the sick-rates are merely crude sick-rates, with no standardisation for ages.

Health Statistics in the Groups.

—	Training estab.	Atlantic fleet.	Fleets abroad	Home station	Total force.	Marines at H.Q.
Number in group.	3637	29,050	26,950	54,700	110,700	5480
Wounded or killed in action	—	0·03	0·28	0·34	0·24	2·18
Other injuries	100	86·9	112	82	91	141
Venereal disease	[illegible]	107	179	81	113	52
Other diseases	1200	290	427	404	379	459
Total cases (Disease and injury)	1299	483	720	569	583	653
Invalided ..	61	17·9	28	32	23	45
Dead	6	4	4·4	2·9	3·6	1·6
Sick daily ..	77	18·6	29·9	27	25	21
Loss of service per man in days	14·7	6·8	10·9	9·9	9·6	7·9
Loss of service, less venereal disease ..	—	4·6	6·6	7·2	6·7	6·5
Individual Diseases.						
Enteric fevers	—	0·27	1·6	0·32	0·6	0·2
Influenza ..	—	35	35	27	31	6·7
Pneumococcal infection (lungs) ..	12·3	1·4	1·8	3·7	2·7	4·5
Rheumatic fever	18·4	1·7	2·3	2·5	2·3	3·8
Tuberculosis ..	—	2·3	2·3	2·4	2·4	3·6
Appendicitis ..	—	3·3	3·7	3·6	3·6	—
Catarrh	—	53	63	78	68	140
Tonsillitis ..	—	24	35	38	33	23
New cases						
Chancroid	—	12	33	8	15	4
Syphilis (1st record)	—	12	17	8	11	5
Gonorrhœa (acute)	—	58	89	46	60	22
Total ..	—	82	139	62	87	31
Scabies	43	27	18	40	31	28

Among the individual diseases dysentery has almost disappeared, and enteric fevers appear to have been, for the time at least, mastered by inoculation. The case-mortality, too, which was 23 in 1911, has been reduced to 15 per cent. Malaria had a serious increase, and Mediterranean fever is again increasing. Meningococcus infection was hardly seen. Pneumonia is less prevalent than in former years. Rheumatic fever shows only half as many cases as in 1915, and those are milder. They only last 20 days, and few are invalided or die. Tuberculosis claimed 264 cases, 247 invalids, and 31 deaths, the figures per 1000 working out to 2·38 cases, 2·23 invalids, and 0·28 deaths. The figures ten years ago were very little different. Among the larger groups, cases and invalidings were heavier in the "Marines at Headquarters," but incidence was greatest upon writers (8·77), followed by victualling ratings (4·49), the sick-berth staff coming this year only third with 4·27 per 1000. They had 6·82 in 1911 and 5·42 in 1915, so they have made a distinct improvement, that will, we hope, increase.

Venereal Disease and Malignant Disease.

Venereal disease (9636 fresh infections, 2907 later cases, 143 invalids, 56 deaths) has reasserted itself since the war, and cases are now about as frequent as in 1911. Some medical officers ascribe the increase to drink and carelessness about preventives; Constantinople and the many unfortunate Russian women there, made refugees by the war, and "dependent on prostitution for a livelihood," had a particularly evil influence. At Simon's Town

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[1] Statistical Report on the Health of the Navy for 1921. London: H.M. Stationery Office. 1924. 6*s.* 6*d.*

[2] THE LANCET, 1922, ii., 1032.

"no houses are used . . . and intercourse carried out clandestinely in the open," which shows how prevalent prostitution is there. But all kinds of venereal disease were most increased in China, though Hong-Kong shows improvement. Cases in the Atlantic Fleet are double what they were in the Grand Fleet in 1915 (107 against 53 per 1000); the increase is least among Marines at headquarters. Syphilis, first record, shows the greatest increase. Venereal disease now accounts for nearly one-third of the days' sickness of the Navy, and more than a third of the days in hospital; it is a frightful expense. Surgeon-Commander L. Kilroy is complimented on his initiative which established a routine of treatment (see THE LANCET, Dec. 31st, 1921) with benefit to the patients and economy to the service. Diseases of the eye and ear cause much invaliding, particularly in the first year of service, as latent defects are manifesting themselves under training. Appendicitis shows an unexplained increase; skin diseases are fewer, but scabies has increased along with venereal disease. Malignant disease shows a decrease from 1915, when the incidence (0·37 per 1000) was higher than ever recorded before in the Navy; in 1921 it is 0·22. The rise began about 1909, and in the last ten years the prevalence has been, roughly, double that in the preceding decade. We have no figures for the years since 1915, and it is for this reason that we particularly regret the decision of the Admiralty to cancel preparation of the reports for 1916 to 1920. During the preceding years the rate had been rising rapidly on the whole, though with considerable fluctuations from one year to another. For want of the intervening reports we are unable to decide whether the low figure this year signifies a cyclic diminution of malignant disease in the service in the last few years or merely a drop for a year in the activity of a pathological process which is gaining more hold as the time goes on. The solution of this question has interest far outside the Navy, for it is constantly questioned whether the numerical increase in deaths from malignant disease, which is allowed by all to be occurring, depends on some special activity of, or increased susceptibility to, malignant disease, or to the greater age nowadays of the population at risk. In the Navy we are no longer told the age of the men in the service, but we will probably not go far wrong if we conclude that the service is no older, but rather a little younger than before. And yet malignant disease has certainly, on the official figures, increased its incidence from, at a rough average, 0·13 per 1000 in the ten years before 1909, to something so much larger in the succeeding years that a rate of 0·22 in 1921 looks like a drop. Perhaps a cancer research fund might help the Admiralty to get the statistics for the lost years prepared.

The Health of Younger Sailors.

As to the training establishments and the health of the young, so apt to be the test of sanitary administration, the tables and statistics are again a little confusing, for the numbers given on pp. 95 and 182 do not agree.

		P. 95.	P. 182.
Boys ..	.. *Impregnable*	1660	1153
Boys ..	.. Shotley (*Ganges*) ..	2240	1914
Youths..	.. *Vivid*	570	570

Again, the number of cases of pneumonia from *Impregnable* is stated, on p. 22 as 18, on p. 182 as 13 per 1000; but these figures correspond to a total complement of 1384. Which of these three figures is correct? In any case there has been a marked improvement this year, for in 1915 there were 30, but in 1921 only 12 cases of pneumonia per 1000 in the training establishments reported upon. What is wanted, however, is a statement of the sickness that occurred in all the training establishments for recruits, cadets at Dartmouth, boys and youths, boy and other artificers, marine, and also stoker recruits. The individuals here reported upon would be excluded from the Home Station tables, which would then represent more exactly the health conditions of the working Navy, which has become accommodated to its work.

Apart from the serious increase in venereal disease, the great question that emerges from the study of this report seems to be: Why does the incidence of tuberculosis on a population of young, strong men, well-clothed, well-fed, well-housed, remain so persistently the same, in spite of every effort?

MALARIA IN MAURITIUS:

A STUDY OF ANOPHELINES.

MAURITIUS has always been interesting from the entomological standpoint. Its remoteness from any of the large land areas of the world has tended towards specialisation, while its communications with Africa on the one hand and Asia, more particularly India and Ceylon, on the other, have led to its exhibiting both African and Oriental species of insect.

Introduction of the Malaria-Vector.

Possibly the most notable event in its entomological history is the supposed introduction of the well-known African mosquito and malaria-vector, *Anopheles costalis*, somewhere about the late 'sixties of last century. If such an event really did occur it was fraught with momentous and disastrous results for the colony, because it was followed by the severe and classical outbreak of malaria which slew well-nigh 32,000 people and drove the European settlers from the coastal belt to the inland heights. Ever since those terrible fever years of 1867–68 malaria has exercised a malign influence on the health and happiness of a large section of the population, has seriously interfered with the economic development of the island, and has been a source of much trouble and expense. The evidence as to the introduction of *A. costalis* has, naturally enough, never been conclusive. In 1867 the association of mosquitoes with malaria was unknown, though not unsuspected, and the malarial parasite had not been determined. Hence we shall never learn definitely how much credence is to be attached to a hypothesis which at first sight appears to have a good deal in its favour and which is discussed at some length in the reports of Ross, Fowler, and Balfour. It is possible that this mosquito has existed for centuries in Mauritius, that malaria was always present there in an endemic form, and that the great epidemic was due to causes other than the chance introduction of *A. costalis*. The new report on the *Anophelinæ* of Mauritius by Malcolm E. MacGregor, entomologist to the Wellcome Bureau of Scientific Research, while it does not clear up the above question, is a most important document and indirectly may be said to shed light on the matter, for it records the discovery of a new African anopheline, *A. funestus*, in Mauritius, regarding which the same problem arises—i.e., has it been there for hundreds of years or has it been recently imported?

Mr. M. E. MacGregor's Visit.

Mr. MacGregor visited Mauritius as the outcome of the inquiries into the medical and sanitary condition of that colony conducted by Dr. Andrew Balfour in 1921. The latter realised that our knowledge as regards the bionomics of the Mauritian anophelines was defective and that it was very necessary to undertake an extensive entomological inquiry combined with intensive anti-malaria work. He submitted a scheme of operations to the Colonial Office, but after consultation with Dr. Guy Marshall, Director of the Imperial Bureau of Entomology, it was decided to institute a preliminary inquiry on a smaller scale. Dr. Balfour had noticed that there was a marked difference in the summer and winter distribution of *A. costalis*, and, owing to the great restriction in the breeding places of this mosquito during the winter months, had suggested that an intensive campaign against the water stages of the mosquito during this season would probably yield important results. He did not think that *A. costalis* hibernated during the cold weather in Mauritius and therefore believed that conditions were favourable for the type of campaign he advocated. Dr. Marshall considered that further information on the important question of hibernation should be obtained in the first instance and, as a result, Mr. MacGregor undertook the work fully detailed and admirably illustrated in his report. He confirmed Dr. Balfour's views as regards hibernation and the advantages of intensive winter operations against *A. costalis*, but he accomplished much more, for not only did he, as stated, discover that *A. funestus* is an inhabitant of Mauritius, but he made careful and valuable observations on the bionomics of the four species of Mauritian anophelines now known to exist, determined their malaria-transmitting powers, advanced a scheme for their suppression, and discovered in Mauritius no less than 11 species of culicine mosquitoes, hitherto unrecorded from these islands, and one of which, *Ædes mascarensis*, is new to science. He also made a survey of the neighbouring island Dependency of Rodrigues, determined its culicine fauna, and made recommendations with respect to safeguarding this colony from malaria.

A Missed Species.

All these matters and several others of less importance are dealt with in his report, which is divided into two parts, the first dealing with the malaria and mosquito question in Mauritius from the ætiological and bionomical standpoints and devoting also a few pages to conditions in Rodrigues; the second concerned with the scheme for an anti-malaria campaign based to a large extent on the new facts determined as a result of his inquiry. There could be no better example of the value of the work of the trained field entomologist. Take MacGregor's discovery of *A. funestus* in Mauritius. From the evidence he furnishes it is almost certain that this mosquito eluded Ross, Fowler, and d'Emmerez de Charmoy in 1908, while it was also missed by Balfour in 1921, who, however, as MacGregor points out, had a multitude of matters requiring his attention and was unable to concentrate on entomological work. It is scarcely surprising that Ross and his confrères did not encounter the wily *funestus*, for their investigations only occupied three months, and it was not until four months had passed that MacGregor, almost, as it were, by chance stumbled on a larva strange to Mauritius. His account of the discovery and of his further quest for the species savours of the dramatic. He says :—

> "On Oct. 11th my scientific assistant, Mr. Gébert, and I were searching in Mare Rohan Pointe aux Sables for the rarer culicine species, when suddenly a small black anopheline larva was found in one of the 'dippers' that had been thrust down at the roots of a small species of bulrush which covered the marsh. I examined the larva carefully by means of a hand-lens, and could see at once that we had apparently found a species that had not been observed in Mauritius before. Continued search in the marsh at this point failed to give us others, so I placed the larva in a collecting tube and returned with it in my motor-car to the laboratory at Reduit without further delay. Examination of the larva under the microscope disclosed the fact that it was undoubtedly the larva of a new anopheline species, and I suspected the larva as *Anopheles funestus*. It was placed carefully aside to undergo its metamorphosis, and as it was fortunately then in the late fourth instar, it pupated and emerged successfully four days later. Examination showed that my surmise was correct and that the emerged specimen was a female *A. funestus*.
>
> Highly astonished by our find, Mr. Gébert and I proceeded again to Mare Rohan to search the marsh from end to end. First searching where the larva had been discovered we could find no others, but later on when we had got to about the middle of the marsh where there was more open water on which, floating half submerged, were numerous dead cocoanut palm leaves, we found enormous numbers of *A. funestus* larvæ, pupæ, and eggs. It became evident that the larvæ and pupæ were to be obtained in largest numbers when we 'dipped' *under* the floating cocoanut leaves."

Later he describes finding *A. funestus* elsewhere, and records a remarkable observation regarding the habits of its larvæ :—

> "My assistant and I, who had first noted the fact that the larvæ at Mare Rohan seemed to hide under the leaves of the floating cocoanut palms, started our investigations on the bionomics by searching the recorded breeding places under all floating vegetation. We soon found that the larvæ could most readily be obtained in this manner, but the numbers we succeeded in capturing were disappointingly few. One day while searching a small backwater pool on the Tamarin River (Black River District) where the water was shallow, and where numerous flat leaves of a water plant dipped below the surface, we found that by dipping under the leaves and close against the bank of the pool, large numbers of the *A. funestus* larvæ were obtainable. By dipping in any other way, even only a few inches from the bank, not a single larva could be found.
>
> Stopping my work and remaining motionless where I stood, I stooped and peered carefully down at the weeds near the bank. Greatly to my surprise, I saw scores of *A. funestus* larvæ ranged in lines lying on the water surface as close in to the bank as it was possible for them to get. A movement on my part which disturbed the vegetation caused some to dive, and many *to wriggle up out of the water on to the wet leaf surfaces.* Resuming a motionless position, I noticed that after the lapse of a minute or two these larvæ would wriggle down to the water once more, and, with the others that had dived, would in time, if not again disturbed, swim a few yards away from the bank. The slightest movement, such as treading lightly on the ground, was sufficient to alarm the larvæ, and they would dart to the bank, and if further alarmed would either dive or climb up the leaves once more.
>
> The explanation why it was that we had overlooked *A. funestus* while searching for the larvæ of *A. costalis*, *A. maculipalpis*, and *A. mauritianus* was then obvious; for the three latter species, like most anopheline larvæ, are easily captured by dipping in the open water or near the banks. The larvæ of *A. funestus* by taking refuge far in at the extreme edges of the ponds, marshes, &c., are almost safe from the dippers when these are used in the ordinary way."

MacGregor is inclined to think that *A. funestus* may have been introduced comparatively recently into Mauritius from Madagascar, but he admits that it and the other three anophelines, *A. costalis*, *mauritianus*, and *maculipalpis*, the last of which he found to be exceedingly numerous in many places, may have existed on the island for centuries. His discovery of *A. funestus* has much hygienic importance, for this anopheline in its developmental stages prefers shade, whereas *A. costalis* shuns it. At the same time, it is fortunate that the distribution of *A. costalis* is conterminous with and overlaps that of *A. funestus* so that no extension of anti-mosquito measures to *new localities* is required.

Seasonal Distribution of Anophelines.

The following table presents in a concise fashion the variation in the summer and winter distribution of the four anopheline species :—

WINTER.	SUMMER.
Anopheles mauritianus. Dispersion : From the coast to the highest altitudes all over the island. Large numbers of larvæ, pupæ, and adults obtainable.	*Anopheles mauritianus.* Dispersion : As in winter. Numbers obtainable not noticeably changed.
Anopheles maculipalpis. Dispersion : Restricted to special types of breeding places from the coast occasionally up as high as 1200 feet. Considerable numbers obtainable.	*Anopheles maculipalpis.* Dispersion : As in winter. Numbers appreciably increased.
Anopheles costalis. Dispersion : From the coast to 1200 feet at many places. Large numbers obtainable at lower altitudes, and very few near the altitude of 1200 feet. Found once at 1800 feet (Forest Side).	*Anopheles costalis.* Dispersion : From coast to 1800 feet (in cattle hoof-holes at Forest Side). (Dagoutiers, Parc aux Cerfs, and Quartiere Militaire, 1500 feet.) Numbers very greatly increased, both at the coast and inland areas.
Anopheles funestus. Dispersion : From the coast, but not above an altitude of 500 feet. Large numbers obtainable at the coastal belt.	*Anopheles funestus.* Dispersion : From the coast to 500 feet (Valton estate).

The author lays much stress on what he calls the "inland winter refuges" of *A. costalis*. Indeed, his plan of campaign, which cannot be here detailed, centres round these limited specialised breeding places. He regards the outlook in connexion with the suppression of malaria as hopeful provided, and this is all-important, that those in charge of the operations are independent of, though working in close association with, the local medical and health department, and that public interest and sympathy are aroused by appropriate propaganda work. He agrees with Balfour that the present malaria statistics are entirely unreliable, that the recorded mortality from malaria is fallacious, but that malaria is undoubtedly an important economic factor in the welfare of the colony.

Mauritius and Rodrigues.

He contrasts Mauritius with Rodrigues. There is no malaria in the latter for there are no anophelines there, and its inhabitants compare in general health and physique very favourably with the malaria-saturated Creoles and Indians of Mauritius. He explains how the barrier coral reef by keeping vessels off shore has indirectly prevented anophelines reaching the island, and he puts forward a strong plea against the project of building a jetty from Port Mathurin out to the edge of the reef. Such a development would almost certainly abolish the immunity Rodrigues enjoys as regards both anophelines and malaria and would be a disastrous undertaking. It is to be hoped Mr. MacGregor's recommendation will not go unheeded.

There are many other matters of interest in this valuable contribution to the literature of mosquitoes and malaria. It should be read and studied by all interested in these kindred subjects and also by those who, in virtue of their official position, are charged with the double duty of safeguarding and benefiting the public health of tropical communities.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

"Papa" Pinard.

THE Chamber of Deputies has elected as its President with great unanimity, Prof. Pinard, the veteran obstetrician, whose playful title of "papa" is in acknowledgment of his having brought more than 20,000 children into the world. At the outbreak of hostilities in 1914 Pinard relinquished a brilliant university career to coördinate all the child welfare agencies in Paris. A central office was instituted at the Maternité, from which went out a band of devoted voluntary workers; and during the first four years of the war nearly 14,000 pregnant women were cared for in municipal or private homes, and another 13,000 nursing mothers in refuges where they could remain until their infants were weaned. Pinard is regarded indeed as the founder of puericulture in France and as the one who saw clearly the fearful threat to child-life involved in the absorption of married women into factories. Retiring in 1920 under the age-limit from the chair of puericulture in the Medical Faculty, he became a deputy in the new chamber and at once propounded there a scheme for an enormous nursery to accommodate 1500 children with their mothers, a scheme which enlisted the sympathy of the Minister of Hygiene, Mr. Breton. Prof. Pinard celebrates this year the eightieth anniversary of his birthday and his jubilee as a member of the medical fraternity.

Aneurysm of the Internal Carotid.

Dr. Rouvillois, of the school of military health service at Val-de-Grâce, recently reported to the Academy of Medicine a case of arterio-venous aneurysm in the intracranial portion of the internal carotid artery. The formation of this aneurysm was due to a somewhat rare cause. The cause of arterio-venous aneurysm is usually a direct injury to the vessels, but in this case not even the slightest wound was to be found either in the neck, mouth, or pharynx of the patient, who was 22 years old. He had been flung forcibly to the ground by the bursting of a large shell, and following this violent trauma the signs of aneurysm appeared. It is therefore logical to suppose that an arterio-venous communication was caused by the violent contusion, an uncommon occurrence. Complete recovery followed the operation of applying a quintuple ligature and completely removing the aneurysm. The aneurysm itself consisted of an arterial sac, in addition to the arterio-venous communication, which was adherent to the wall of the pharynx.

The Therapeutics of Long Sea-Voyages.

In a recent communication to the Academy of Medicine the port sanitary officer of Havre, Dr. Adrien Loir, recalled the large number of works published in England before 1890 dealing with the therapeutics of long sea-voyages. At that time long sea-voyages were widely advocated by English doctors, and remarkable results were achieved. French doctors, Dr. Loir urged, should make themselves familiar with the question which was so carefully studied by Dr. J. Burney, Dr. A. Crosbee Dixon,[1] and others, in particular Dr. Hermann Weber and Dr. A. Parkes Weber, while in 1892 further articles on this subject had appeared in THE LANCET. While in England on a mission on behalf of the League of Nations Dr. Loir studied this literature and commends the investigation of the therapeutics of long sea-voyages to his colleagues.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Bacterial Purification of Rivers.

AN unusually interesting programme was enjoyed by the Society of Hygiene of Johns Hopkins University on May 12th. Dr. W. H. Frost, professor of epidemiology, discussed bacterial purification in the Ohio river, a study of which was undertaken by the U.S. Public Health Service some ten years ago. A maximum bacterial count was found not at the sewer outfalls (of which there were six in the portion of river studied), but some 12 hours lower down the river. This may possibly be due to breaking up of clumps of bacteria; Dr. Frost did not consider it probable that there was any multiplication of bacteria in the water. Attempts to fit curves to the observed decrease of bacterial counts were most successful when the counts at the actual sewer outlets were disregarded. Curves then showed that purification takes place at a diminishing rate. Observations in winter months showed further that the purification takes place more slowly at lower temperatures. These experimental studies are to be continued.

Experimental Measles.

Dr. Joseph M. Scott presented a report of the experimental work on measles which he is doing in collaboration with Dr. Charles E. Simon. Filtered washings of swabs from measles throats were injected intravenously into a series of rabbits. Daily swabbings were taken and an injection into rabbit made each day from each of six members of the family in which measles cases were occurring. Passage of the virus through a series of rabbits gave a virus of fixed character producing elevation of temperature, leucopenia, relative decrease in polymorphs, and relative increase in basophils. Exanthems and enanthems were not noted, nor was erythema. They consider it essential to make differential blood counts to determine measles infection in the rabbit. Rabbits that have had "measles" are found to be immune to the virus. Three out of five rabbits contracted "measles" from exposure in the same cage with experimental animals that had been infected intravenously. Attempts to obtain infective virus from the dust and air in the vicinity of measles patients gave negative results, but material from secretions of nasopharyngeal membranes of measles patients gave constantly positive results. Even when the material had been allowed to dry on the handkerchief for as long as four days, positive reactions in rabbits were obtained. A very satisfactory series of control experiments adds to the value of the results obtained. Further experiments will be undertaken to determine the period of viability of the virus in the throat and on material outside the body. So far, 180 rabbits have been inoculated. Three monkeys inoculated with the rabbit virus produced a characteristic eruption in one case, and rise of temperature and leucopenia in all three. In the discussion Dr. Simon emphasised that the twentieth rabbit in a series of rabbit-to-rabbit infections acquired immunity to an active human virus which produced a typical reaction in control animals.

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[1] Sea Voyages for Health, THE LANCET, 1888, ii., 264.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Milk Injections in the Treatment of General Paralysis.

ENCOURAGED by the results described by Prof. Wagner-Jauregg, of the Vienna University, in the treatment of G.P.I. with the protein therapy and inoculation of malaria, some Hungarian neurologists have given a trial to this new method. Particular interest attaches to the fact that the experiments were carried out in the clinic of Dr. Moravcsik, director of a large psychiatric institute and lecturer on nervous and mental diseases in the Budapest Royal University, his clinic being known for more than 30 years as being strongly conservative. The experiments were begun in 1920 with tuberculin, and then an interesting chance directed attention towards milk injection. A patient, suffering from advanced general paralysis, had a carbuncle on his neck, which had been incised and bandaged. The patient, however, had torn off the bandage and smeared the wound with fæces, causing an extensive inflammation round the wound, with gangrene of the edges. As this condition aggravated his mental state, a surgical specialist was consulted, who recommended the application of milk. The patient was given 10 c.cm. of sterilised milk under the skin of the abdominal wall on October 19th, 1920; the same day he had a temperature of 40° C., which subsided on the following morning. From this time onwards his wound improved rapidly, and his bodily strength began to return. Within one month his wound was totally healed. In December his mental condition began to improve, his restlessness ceased, his behaviour showed ever-increasing coördination, and on Feb. 21st, 1921, he left the clinic quite composed. Doubtless, the chief factor in the patient's improvement was the long-continued suppurative process, nevertheless the change in the patient's condition after administration of the milk injection was so striking as to merit further study, and the doctors of the clinic felt entitled to experiment more extensively with the injections. By this method they treated 40 cases of general paralysis, many of chorea, and several of epilepsy. Dr. Moravcsik stated that he felt justified, in view of the results obtained, in considering milk to be the most efficacious of the non-luetic therapeutic measures (milk, phlogetan, and tuberculin) administered at the clinic, and that the results of milk therapy were much superior to those of antisyphilitic treatment in G.P.I. He considered milk to be a very valuable addition to the scantily furnished armamentarium against general paralysis. In ten cases of chorea minor the milk protein therapy gave excellent results. The explanation of the efficacy of protein therapy, in that it is due to leucocytosis, activation of the protoplasm, stimulation of antibody-forming elements, increased transfusion and hyperæmia in the diseased foci, &c., is at present only theoretical, and must be confirmed by further and more detailed experiments. On a parallel with this, Dr. Moravcsik contends, protein therapy must be applied on a wider scale in nervous and mental diseases. The ultimate value of the treatment can only be decided after extensive clinical experiment.

Soap Inunction for Lung Diseases.

The Central Tuberculosis Dispensary of Budapest has made extensive experiments on the efficacy of turpentine soap ointment, a method of treatment which has been much recommended by some continental authorities. Dr. Aladar Bathory, who controlled the experiments, employs the following composition :—

℞	Potash soap		
	Yellow vaseline ..	āā	15·0 g.
	Carbonate of potash		0·5 g.
	Beechwood creosote.		
	Turpentine oil.		
	Camphorated oil.	āā	3·0 g.
	M. fiat ung.		

This is quite a soft ointment, with which the back, chest, and arms of the patient are anointed every alternate day. It is advisable to have the inunctions made by a nurse, and about a teaspoonful of the ointment is applied at one time. Dr. Bathory selected for treatment such patients as were not suited to specific treatment, owing to high fever or to extensive destruction of the lungs. His results were as follows: After one or two weeks' treatment the patient's subjective symptoms improved considerably, the temperature was lowered, and in some cases reached normal. There was decided improvement in the patient's outward appearance; facies and gait showed greater tone. Those who had come for treatment with an escort were able in two or three weeks to come alone. In one case extensive œdema of the lower limbs disappeared completely, the cough was greatly reduced, and the appetite increased. The disappearance of catarrhal rhonchi in the lungs was striking. As regards the effect of the treatment on the skin, nothing was to be noted beyond a slight hyperæmia. No disturbing symptoms were shown either by the kidneys or other organs. Further investigation into this method is being carried out at this institution.

The Services.

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. G. Nunn and Surg. Lt.-Comdr. F. L. H. MacDowel to the *President* for hospital course.

Surg. Rear-Admiral Sir A. Reginald Bankart is placed on the Retd. List at own request to facilitate the promotion of junior officers.

ROYAL ARMY MEDICAL CORPS.

Capts. G. Fleming and A. K. Forbes retire receiving a gratuity.

Lt. L. F O'Shaughnessy resigns his commn.

TERRITORIAL ARMY.

C. R. Dudgeon (Maj. R.A.R. of Off.) to be Capt.

Supernumerary for Service with O.T.C.—Capt. (Bt. Maj. J. B. Orr, from Gen. List, to be Capt. (Bt. Maj.) and to command Inf. Unit, Aberdeen University Contgt., O.T.C.

Lt. C. S. Atkin to be Capt.

ROYAL AIR FORCE.

R. T. F. Grace is granted a short service commission as a Flying Officer.

F. S. S. Whiter (temp. Lt., Dental Surgeon, General List Army) is granted a temporary commission as a Flying Officer on attachment to the R.A.F.

INDIAN MEDICAL SERVICE.

Lt. Col. A. Hooton to be Major-General, and Lt.-Col. T. B. Kelly to be Col.

Capt. D. C. McNair relinquishes his tempy. commn. and is permitted to retain the rank of Capt.

The King has approved the retirement of Col. Bhola Nauth.

INDIAN MEDICAL SERVICE DINNER.

The annual dinner of the Indian Medical Service will be held at the Trocadero on Wednesday, June 18th, Colonel J. J. Pratt in the chair. Tickets and all particulars may be obtained from the honorary secretaries, 63, Addison-road, Kensington, W. 14.

Public Health Services.

INQUIRY COMMITTEES ON THE CONDUCT OF PANEL DOCTORS: A QUESTION OF PROCEDURE.

Before a Divisional Court recently the Attorney-General appeared to show cause against a rule nisi obtained by two medical men, practising in partnership, Drs. A. B. and C. D., who sought to quash an order of the Ministry of Health directing that £1000 should be withheld from the remuneration payable to them by the Insurance Committee in respect of their panel patients. The name of each doctor appeared on the Lancashire Insurance Committee's panel, but only Dr. A. B. had a list of insured persons, the other partner, Dr. C. D., acting as Dr. A. B.'s deputy when attending these patients. Complaints having arisen that the doctors were improperly charging fees to insured persons, an investigation by the Medical Benefit Subcommittee under Part V. of the Medical Benefit Regulations was instituted into the complaints against Dr. A. B. only. On a consideration of the report of this subcommittee, the Minister suggested that the Insurance Committee should make representations under Part VI. of the Regulations in respect of *both* doctors that their continuance on the panel was prejudicial to the efficiency of the insured. The committee made representations accordingly, and the Minister appointed an inquiry committee. On consideration of the inquiry committee's report the Minister decided that the doctors' names should not be removed from the medical list, but that £1000 should be withheld from their remuneration.

In his opening speech against the rule the Attorney-General submitted that it was a fundamental principle of the National Insurance system that medical practitioners under it should be paid by capitation fees and should accept no other remuneration from their panel patients, except in accordance with Regulations. He expressed the view that the court would have no desire, if it should be found to have the power, to review the discretion of the Minister or to inquire into the severity of the penalty imposed. The points at issue in the case were technical matters relating to the procedure adopted. The question was whether an investigation by the Medical Service Subcommittee under Part V. of the Regulations was a condition precedent to the holding of an inquiry by the Minister under Part VI. of the Regulations. He submitted that the investigation under Part V. had nothing to do with the inquiry under Part VI. Sir William Finlay, K.C., who represented the medical men in support of the rule, pointed out to the court that only technical points were open to him and that he was precluded from going into the merits of the case or into the amount of the penalty. A preliminary investigation had been held under Part V. of the Regulations into complaints against Dr. A. B. only. This had been followed by an inquiry under Part VI. into the conduct of both doctors. As there had been no investigation by the Medical Service Subcommittee under Part V. in respect of both doctors, there had been no proper inquiry under Part VI. On behalf of Dr. C. D., it was argued that as he had no list of insured persons, but merely acted as Dr. A. B.'s deputy, he had not treated insured patients under the terms of a contract with the Insurance Committee and that no representations against him could be made to the Minister. After the arguments of counsel had dealt with the technical points involved at some length, the Lord Chief Justice, in giving judgment in discharging the rule nisi, said that the contention had not been pressed that an investigation by the Medical Service Subcommittee under Part V. must necessarily precede every inquiry under Part VI., but it had been argued that a representation by an insurance committee with regard to an inquiry under Part VI. could only be made as provided in Part V. 30 (2)—i.e., in the committee's report to the Minister following an investigation by the Medical Service Subcommittee. While the committee had a discretion to make a representation in this particular way, he considered the powers given in Part VI. Articles 41 and 42 (regarding the making of representations and the holding of inquiries) were general and that representations could be made, as had been done in the case of these doctors. In their case, after the Medical Service Subcommittee had reported, the Minister had recommended the Insurance Committee to proceed by representation under Part VI. This had had as its result the decision to deduct by instalments the sum of £1000, and in his view the action of the Minister was not *ultra vires*. Mr. Justice Roche and Mr. Justice Branson concurred, the latter stating, as regards the position of Dr. C. D., that he was a panel practitioner and his terms of service were that he should not take private fees from panel patients.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

The following table gives some of the principal health statistics for 1923 of one county borough, six boroughs, and one urban district, the health reports of which are commented on below :—

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Eastbourne C.B.	53,900	13·3	9·7	0·9	1·3	1·4	25	39	†
Ramsgate B. .	30,250	20·7	12·9	1·1	1·5	1·7	19	45	0·0
Margate B. . .	28,080	17·3	10·6	1·3	1·6	1·0	†	43	6·2
Hendon U.D. .	56,690	16·3	7·9	0·6	1·0	1·1	29	46	4·3
Gillingham B. .	55,200*	19·4	10·2	1·3	1·1	1·4	24	48	0·9
Watford B. . .	47,100	18·3	8·5	0·8	1·2	1·4	31	50	2·3
Hyde B.	34,030	16·4	12·9	1·2	1·5	3·4	37	68	5·3
Stafford B. . .	29,370	16·7	8·8	0·9	1·1	1·4	33	55	4·1

* Gillingham's population for the calculation of death-rates is 47,620.

† Indicates that the information is not given in the report.

Eastbourne.

Dr. W. G. Willoughby reports that housing is still the most adverse factor in this county borough and that the outlook is only very gradually improving. However much one may theoretically believe in private ownership, he says, there is no alternative to State housing if private owners refuse to let houses to families with young children. Such an attitude on the part of private owners is common in Eastbourne. For the municipal houses, on the other hand, preference is given to large families. Dr. Willoughby considers that about 700 new houses would meet present requirements. The houses completed during 1923 numbered 102, of which 30 were municipal houses. All the municipal houses have baths, and the rents are 18*s.* 4*d.* per week for parlour houses and 14*s.* 8*d.* for non-parlour houses. Reference is made to the hopeless state of the law as regards milk which does not come up to the standard of 3 per cent. for fat and 8·5 per cent. for non-fatty solids. The only two prosecutions undertaken failed. Some of the special difficulties of the tuberculosis scheme are the want of satisfactory housing accommodation, of hospital provision for surgical tuberculosis, and of suitable employment for tuberculous persons who can do a little work. The municipal maternity and infants' home did useful work; 17·6 per cent. of all the births in the borough took place there and 32 ailing infants were admitted in addition to those born in the home. Considerable trouble has been experienced with regard to unqualified women acting as midwives, and the proviso in the Act as to "habitually" and "for gain" makes legal action difficult.

In his school report Dr. Willoughby says it is too early to speak as to the effect of the introduction of the system of charging for treatment, but he is glad the board have allowed them some latitude in the application of the new regulations. Permission to establish a massage and electrical clinic was refused, but fortunately the work has been carried on at a voluntary clinic. The reduction of uncleanliness and verminous conditions in the schools is marked in recent years. There are many refusals to accept dental treatment. The open-air school, formed out of army huts and opened in June, 1920, has fully justified its existence, and its accommodation has been increased to 75 places. Medical inspection of the 658 children in the two municipal secondary schools showed that 272 required treatment or observation. For the majority of these the parents were asked to provide medical attention, but 33 were treated free at the school clinics. Dr. E. H. Coghill reports that among the girls the outstanding defects were enlarged tonsils and enlarged cervical glands, probably arising from tonsils and teeth. The general physique was good and cases of spinal curvature few. As regards the boys, Dr. T. Turner reports a gratifying reduction in flat-feet, which he attributes to the disappearance of the effects of poor feeding during the war. Enlarged tonsils and adenoids are now negligible, owing to treatment, breathing exercises, &c., during the earlier school period. Dental caries is, however, much too common.

Ramsgate.

Dr. W. J. Bannister also says that housing is still the most pressing problem, and that the only hope for an adequate provision of small houses lies in a State or municipal scheme. No municipal houses were erected in 1923. Two of the 121 cows housed in the borough were found to be suffering from generalised tuberculosis and were destroyed at the knacker's yard. Most of the meat sold is imported foreign meat. Efficient supervision of the meat killed in the borough is not possible owing to the situation of the various private slaughter-houses and the fact that killing goes on at all hours. On the other hand, the butchers have an insurance scheme against condemnation, which encourages the notification of suspicious meat to the health department. The council's station for the sterilisation of shell-fish dealt with 34,614 gallons of cockles during the year. The premises on which ice-cream was made and stored were reported to be satisfactorily kept. The school report shows that seven of the nine elementary schools are non-provided and do not comply with modern sanitary requirements. Six prosecutions of parents were undertaken for uncleanliness of their children. Many of the children, found to be in a pre-tuberculous condition, have to be excluded from school for long periods, in the absence of an open-air school. During the year 152 children were found to have enlargement of tonsils or adenoids. In most cases the condition yielded to attention to carious teeth, &c.; only 14 cases received operative treatment. The school dentist, Mr. P. H. Hickman, reports that many parents refuse treatment for their children. No organiser of physical training for the area has been appointed, although Dr. Bannister reports strongly in favour of such an arrangement.

Margate.

Dr. Rowan McCombe refers—the reference is cumulative—to the handicap to the standard of health and cleanliness resulting from the deplorable shortage of houses. In 1923, 22 municipal houses were built, but 300 are needed immediately. In the older parts of the town not only cottages but also better-class houses have no bathrooms, and the provision of public baths is greatly needed. Of the four midwives practising in the town, two are municipal and occupy their spare time in antenatal visiting. In his school report Dr. McCombe reports that uncleanliness has been more prevalent among the school-children during 1923. He would like to have some more prompt and direct method of dealing with apathetic parents, such as power to cut the hair short or making it an offence to send children to school with verminous heads or bodies. Dr. McCombe would also like to see an open-air school established to accommodate 20 to 30 children.

Hendon.

"Happy Hendon" had, Dr. T. S. McIntosh tells us, no public health history in 1923. A scheme is in course of preparation for the coördination and extension of the child welfare and school medical services, and more supervision is needed of children between the ages of 2 and 5. Hendon is apparently unique among urban districts in having no housing problem. The number of houses erected during 1923 was 625, of which 20 were municipal. One closing and demolition order was carried out, and at the end of the year there were no houses unfit for habitation.

Gillingham.

Dr. W. A. Muir reports that the isolation hospital is unsuitable for its purpose and its site too small. Suitable sites for a modern hospital have been offered, and it is suggested as an alternative that the borough might join with the neighbouring boroughs of Chatham and Rochester. Like the medical officers of many large urban districts, Dr. Muir thinks the supervision of midwives should be transferred from the county council and form part of the Gillingham maternity and child welfare scheme. Two firms in Gillingham now sell wrapped bread and the hospital committee are among their customers. The chief sanitary inspector attended the demonstration of methods of slaughtering arranged by the National Federation of Meat Traders' Associations. Dr. Muir refers to the view of the Federation that the humane killer interferes with the keeping properties of the meat, more especially of pig's flesh, with regard to which investigation is still taking place. There is still a marked shortage of houses, but no municipal houses were built during the year. About £15,000 was advanced during the year ended March 31st, 1924, to enable tenants to acquire the ownership of their houses under the Small Dwellings Acquisition Act, 1899.

Watford.

Dr. W. J. Cox prefaces his report on housing by extracts from a speech delivered by the King at a housing reception held at Buckingham Palace on April 11th, 1919. Since then nearly 1000 municipal houses have been erected, but 1000 more are needed. There are about 300 houses unfit for habitation, many of them in an extreme state of disrepair and some indescribably filthy and infested with rats and other vermin. The Infants' Home at Little Nascott, which was originally started as a war creche, is now serving a useful purpose as a home for the reception of delicate and ailing babies, 44 of 77 admissions during the year being of that type. A dental clinic has been begun for nursing and expectant mothers, and children under school age. The Watford special school for mentally defective children (accommodation 40) continues to do good work.

Hyde.

Dr. Nicolas Gebbie, like his colleagues, refers to the shortage of houses and overcrowding. His references to the smoke problem leave the impression that practically no action is being taken with regard to mill and factory chimneys. He states that the smoke problem "is in large measure a problem of the household chimney." A glance at the statistical table above tempts one to suggest that industrial smoke may be one reason why the death-rate from respiratory diseases in Hyde is nearly three times that of the other towns and that industrial smoke may be worth while tackling, whilst the public is being slowly educated in the matter of the domestic use of coal. In his report on the maternity and child welfare work Dr. Gebbie refers to the high neonatal mortality, and says the antenatal branch of the work does not increase like the rest of the work and that, so far, only a few of the midwives have availed themselves of the invitation to bring or send cases to the antenatal clinic. The school dentist, Mr. E. A. P. Parker, reports that of the children selected for treatment about 78 per cent. avail themselves of the opportunity.

Stafford.

Dr. J. T. Macnab says housing difficulties continue to be acute but that fresh activity is being shown, and it is hoped that the current year will bring some relief. Dr. Macnab advocates the protection of children during their school career against diphtheria by the administration of the two or three necessary injections of toxin-antitoxin. This offer is now made to parents in Stafford. Referring to the high neonatal mortality and the crowding at the infant welfare centres, Dr. Macnab mentions that sanction has been asked to the appointment of a second health visitor in order to enable antenatal work to be done and the holding of more sessions at the centre. A duplicate water main from Milford was brought into use early in the year, so that the supply of the town is now protected against accidental stoppage. Cesspits and privies will be abolished as the result of the completion of the new sewers at Rising Brook and Doxey. Waste-water closets cause much trouble by becoming blocked, the liability to stoppage being about eight times that of the pedestal w.c. with flushing cistern.

SCHOOL MEDICAL SERVICE.

Glasgow.

IN Scotland the school year now ends on July 31st and the medical officer's statement is incorporated in the Director of Education's annual report. It is difficult from this rather brief statement to get an adequate idea of the enormous amount of good work, much of it pioneer, which we know is going on in Glasgow. The total number of children for whom the education authority is responsible is 194,267, of whom 790 are under 5 years of age and 1134 over 14. Thirteen hostels are in operation for children whose parents have to leave them during the day. In seven cases nursery sections are attached for children from 2 to 5 years of age. These children are looked after by women appointed for the purpose, while in the larger nursery schools teachers are in charge. During the year 32,639 children came under routine medical inspection, and of these 45·2 per cent. were found with defects. There are six principal and 12 subsidiary clinics, with, in addition, two special clinics for tonsil and adenoid operations and ringworm and favus cases. The treatment of chronic otorrhœa by zinc ionisation has been extended, and during the year 152 of these cases were dealt with. The statistics regarding treatment show a considerable increase in cases generally, which is in part attributed by Dr. E. T. Roberts to the industrial depression. There was an increase of 17 per cent. in ear cases, 6 per cent. in eye cases, 10 per cent. in skin disease, and 24 per cent. in other diseases. The large increase of 44 per cent. in the number of cases of chronic suppuration of the middle ear was possibly due to the severe epidemic of measles which occurred in the first half of 1922.

From a survey of heights and weights for the five pre-war and four post-war years it appears that war-time conditions have resulted in a slightly improved physique among the children. There is a post-war increase in 13 of the 16 averages given. At the same time the lowered state of health found among the children for 1922 is continued into 1923. During one month of the winter of 1922 four mild cases of sore throat made their appearance in the Langside Deaf and Dumb Institution. Bacteriological examination revealed these as cases of diphtheria. Swabs of 130 children and 43 members of the staff were taken, and 35 positive or potential carriers discovered. These were kept under strict supervision until bacteriologically negative, and a Schick test was carried out with the consent of the parents on 115 pupils and on 35 consenting members of the staff. The results were positive in 36 cases. All susceptible pupils were immunised against the disease, and as a result of such prompt and thorough methods no further cases occurred in the institution.

Radcliffe.

Dr. John Gibson deplores the uncleanly state of the Radcliffe schools, and points out what his predecessor, the late Dr. D. P. M. Farquharson, reiterated time after time: "If a child is brought up in a dirty, overcrowded home and attends a school where no one seems to care if the floor and windows are dirty and dust is seldom disturbed, then that child will in later life be quite content with a low standard of cleanliness." He suggests that the children might assist in the cleansing of their classrooms. The remedy proposed is distinctly a debatable one, but something ought to be done to remedy conditions where, as was pointed out in 1921, "dust lies thick on every place where it can find a lodgment." The outside sanitary arrangements here are evidently good, but the administration is bad; at some of the schools where the trough system of closets is in use they are flushed but once a week. Flushing twice a day should be the rule laid down for every school. During the year there were 2924 attendances at the dental clinic, the number of scalings and cleaning being 309. The school dentist, explaining this apparently large proportion, says that even though the use of the tooth-brush is unknown in many homes, he very much doubts its efficacy in the prevention of dental caries. Out of a school roll of between 3000 and 4000 considerably more than half were medically examined. By an arrangement with the school attendance officers all children absent from school on account of sickness are at once notified to the medical officer and are visited by the school nurse. This is considered one of the most important duties of the nurse. There are two nurses employed, at salaries of £181 and £166 10*s*. (including bonus).

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 31ST, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely, small-pox, 75 (as against 101 the previous week); scarlet fever, 1450; diphtheria, 788; enteric fever, 88; pneumonia, 900; puerperal fever, 45; cerebro-spinal fever, 14; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 251 (as against 261 the previous week); trench fever, 1; dysentery, 9; ophthalmia neonatorum, 150. There were no cases of cholera, plague, or typhus fever notified during the week. Of the 14 cases of cerebro-spinal fever 6 were notified from the County of London (Bermondsey 1, Hackney 2, St. Pancras 1, Shoreditch 1, Woolwich 1), 2 from Durham (Sunderland), and 1 each from Cumberland (Carlisle), Lancaster (Liverpool), Northampton (Wellingborough), Somerset (Weston-super-Mare), Surrey (Wimbledon), and Yorks, W. Riding (Bradford). Of the cases of encephalitis lethargica 23 were notified from the county of Durham (Sunderland 9, West Hartlepool 1, Felling U.D. 1, Hebburn 2, Ryton 1, Spennymoor 2, Auckland R.D. 1, Chester-le-Street R.D. 1, Easington R.D. 1, Sedgefield R.D. 2, Sunderland R.D. 2), 24 from Lancaster (Liverpool 8, Manchester 4), 23 from Warwick (Birmingham 16), and 27 from Yorks, W. Riding (Sheffield 10).

Deaths.—In the aggregate of great towns the deaths from influenza fell further from 67 to 52. There were in London 9 deaths from diphtheria, 12 only from measles.

FOREIGN DECORATIONS.—The King has given to Mr. Douglas Erith Derry, M.B., Ch.B. Edin., licence and authority to wear the Decoration of the Order of the Nile (Insignia of the Third Class), which has been conferred upon him by the King of Egypt in recognition of valuable services rendered.

THE GENERAL MEDICAL COUNCIL.

(Concluded from p. 1173.)

Penal Cases.

THREE penal cases came before the Council on the last day of the May session.

The first was brought by the Medical Defence Union against a practitioner on the following charge :

> "That, being a registered medical practitioner, you have employed as your assistant in connexion with your practice, one—namely, ————, not duly qualified or registered under the Medical Acts, and have knowingly allowed him on your behalf to attend and treat patients in matters requiring professional discretion or skill ; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

After deliberation the President announced that the Council had decided to dismiss the case, but thanked the complainants, as on prima facie evidence they had a reasonable case.

The second case was brought before the Council by the Dental Board. A registered medical practitioner was charged with giving a written testimonial to an unqualified dentist stating that "you believed he had a perfectly good reputation" and that "you considered him quite suitable for inclusion in the Dentists Register," whereas the dentist was not personally known to him, nor did he know anything of his moral character. The Council warned the practitioner and did not see fit to erase his name from the Register.

The Case of Dr. Frederick John Fehrsen.—The Cape Medical Council referred to the General Medical Council the case of Frederick John Fehrsen, registered as of Sea Point, Cape Town, M.B., C.M., 1879, M.D., 1884, U. Aberd., who had been summoned to appear before the Council on the following charge :—

> "That, being a registered medical practitioner, you wrongfully, unlawfully, and with intent to procure the miscarriage of one Martha de Lange, performed certain operations upon her, and thereby wrongfully, unlawfully, and wilfully procured her miscarriage, of which offence you were on Nov. 13th, 1922, convicted after trial by jury in the Supreme Court of South Africa at Grahamstown, Cape of Good Hope, and in respect of which offence you have been since judged by the Colonial Medical Council of South Africa to have been guilty of infamous and disgraceful conduct, and your name has been erased from the Register of Medical Practitioners of the Province of the Cape of Good Hope ; and that in relation thereto you have been guilty of infamous conduct in a professional respect."

The Council directed the Registrar to erase the name of Frederick John Fehrsen from the Medical Register.

In regard to the case of Henry Love, mentioned in THE LANCET last week, the facts alleged against him in the notice of inquiry having been proved, an opportunity was given to him of reconsidering his position, judgment being postponed until May, 1925.

DENTAL BOARD OF THE UNITED KINGDOM.

FINAL SITTING OF THE FIRST BOARD, MAY 13TH–16TH.

THE final sitting of the first Dental Board was held from May 13th to 16th, and we have already summarised the opening address[1] of the Chairman, Mr. Francis Dyke Acland. The other members of the Board who attended the sitting were Mr. L. G. Brock, Mr. W. H. Dolamore and Mr. W. H. Gilmour (nominated by the Ministry of Health), Mr. D. M'C. Cowan and Mr. W. Guy (Scottish Board), Mr. J. H. Stirling and Mr. E. L. Sheridan (Lord Lieutenant of Ireland), Mr. H. J. Waring, Sir James Hodsdon and Sir Arthur Chance (General Medical Council), Mr. F. Butterfield and Mr. H. A. Robertshaw (Privy Council).

Penal Cases.

Eight disciplinary cases were the subject of consideration. The first case, that of a dentist, 1921, charged with making a false statutory declaration in regard to the employment of an assistant, was dismissed as not proven. In the second case an L.D.S. convicted of indecent exposure was put on probation until the November sitting. In the third, a dentist in practice on July 22nd, 1878, was charged with advertisement on the cover of an almanack, and with improper use of the letters "R.D.S." The facts alleged being proved, an assurance was accepted not to transgress again. In the fourth case, a dentist, 1921, in addition to obtaining goods on false pretences, was shown to have gained access to the Register on a faulty declaration, and his name was erased on this ground. In the fifth case, a dentist, 1921, proved to have aided and abetted his unregistered son to practise dentistry, and to have permitted him to practise in his father's name, was recommended for erasure. In the sixth case, an L.D.S. was proved to have used advertisements on windows, swing signs, and brass plates, in size and quantity greatly in excess of anything required for legitimate professional purposes. The facts alleged having being proved, he was put on probation until November. In the seventh case, a body corporate carrying on the business of dentistry was shown to have advertised, with a view to procuring patients, by means of electric lamps, projecting signs, plates, and boards of a character, size, and wording more than reasonably required to indicate the exact location of the premises. In order not to tie the hands of the new Board judgment was deferred until the next session. In the last case a dentist, 1921, proved to have advertised, with a view to procuring patients, by means of a board 12 feet in length, three electric light-globes painted red, swing signs, show-cases, and other means, was given until November to reconsider his position.

Reciprocity.

A copy of the Dentists Act, 1923, of Barbados was received from the Privy Council, providing that any qualification entitling to registration in the United Kingdom after a course of not less than four years should be recognised for insertion on the Barbados Register. This Act further forbids an unregistered person to practise or do any dental operation for a fee under a penalty of £20 or two months' imprisonment.

Appointment of Committees.

The following Committees were instituted, namely :—

Business Committee : Mr. Brock (Chairman), Mr. Dolamore.

Discipline Committee : The Chairman, Mr. Butterfield, Mr. Gilmour, Sir James Hodsdon, Sir Arthur Chance, Mr. Sheridan.

Educational Grants Committee : Mr. Brock (Chairman), Mr. Robertshaw, Mr. Waring, Mr. Cowan, Mr. Guy, Mr. Sheridan.

Examination Committee : Sir James Hodsdon (Chairman), Mr. Dolamore, Mr. Robertshaw, Mr. Guy, Mr. Sheridan.

Finance Committee : Mr. Waring (Chairman), Mr. Brock, Mr. Dolamore, Sir James Hodsdon, Mr. Stirling.

Registration Committee : The Chairman, Mr. Butterfield, Mr. Gilmour, Mr. Robertshaw, Mr. Cowan, Mr. Stirling.

Research Committee : Mr. Dolamore (Chairman), Mr. Brock, Mr. Gilmour, Mr. Guy, Mr. Sheridan.

The completion was reported of the seal of the Dental Board by Mr. Lessor, which would in future be attached to the formal documents of the Board.

Educational Grants Committee.

It was reported that the Dental School at Belfast had qualified for the grant of £2000 ; the Edinburgh Dental Hospital for £6000 ; the Liverpool Dental School for £2400. Birmingham Dental School intimated that for financial reasons the grant of £1500 could not be taken advantage of at present. The decision of Leeds Dental School, where the staff have undertaken to subscribe £2000, was postponed. King's College grant of £700 will be paid against receipts for new equipment. No decision as to grant had been received from the London Hospital Dental School or the National Dental Hospital.

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[1] THE LANCET, May 24th, p. 1066.

Decision as to the grant of £900 to the Incorporated Dental Hospital of Ireland was adjourned in view of the doubt whether the Free State is now within the jurisdiction of the Dental Board.

The number of students assisted by educational grants or loans up to March 31st, 1924, was 145, of whom 73 had obtained their diploma, 43 were still being assisted, 17 were continuing at their own expense. Of 104 students assisted after the expiration of the Government grants 68 had been enabled to qualify. Of five students in receipt of loans who had qualified one had already commenced repayment by instalments.

Examination Committee.

The fifth and sixth series of prescribed examinations were held in December, 1923, and April, 1924. The December examinations furnished the first opportunity of presenting themselves to persons entered on the list of candidates under the Dentists Act, 1923. At the December examinations there were 28 of these and 53 at the April examinations. There is a total of 633 names on the list of candidates intending to pass the prescribed examinations—namely, 542 dental mechanics, 40 war service candidates, 51 practitioners of 21 years of age.

Attendance at the post-graduate lectures had not been very encouraging, but it was hoped that the institution of a local list of persons on the Dentists Register would enable notices to be sent in future to all dentists resident in the neighbourhood. The average attendances had been, to take one or two examples: Bristol 40, Birmingham 25, Manchester 30, Edinburgh 50. The arrangements for courses of lectures in connexion with the post-registration study, on the other hand, were reported an unqualified success, and there was a general wish that the courses should be repeated next winter, the syllabus to include more practical work and demonstrations with actual patients. The average attendances had been, e.g., Leeds 29, Newcastle 37, Glasgow 65. It was resolved to arrange lectures in the coming session at Birmingham, Cambridge, Cardiff, Manchester, Nottingham, and, if the Board was competent to do so, at Dublin.

Propaganda Committee.

The Board undertook, at the suggestion of the British Broadcasting Company, to provide a lecturer to give one or two talks on dental matters, to be inserted in a programme of talks on other governing factors in public health. The Board of Education was to be invited to receive a deputation from the Board with reference to the institution of suitable instruction in oral hygiene in primary and secondary schools. When the Royal Commission on the National Insurance Acts has been appointed, the Board desires to give evidence as to the need of extending the present provision of dental treatment under the Acts. Authority was given for initial expenditure of a sum not exceeding £50 on the purchase of films bearing on dental subjects for propaganda purposes.

Research Committee.

A confidential report on dental alloys and amalgams was received from Dr. W. Rosenhain, F.R.S., and Prof. E. E. Glynn was granted a sum of £300 to pursue research on the relation between dental sepsis and blood-sugar tolerance, glycosuria, and diabetes.

Free Choice of Dentists.

A memorandum received from the Public Dental Services Association in regard to a circular of the Ministry of Health contained a sentence to the effect that approved societies "do not in all cases allow their members free choice of a dentist." The Board had already written to the Ministry to point out its view that patients had a right to select their own dentists, and that if pressure was put upon patients to seek advice from certain individuals, the practitioners associated with the canvassing body would come under the warning resolution in regard to advertising and canvassing. The Board's view was that if all dentists in a neighbourhood who desired to do so were permitted to enter into arrangements with approved societies, without advertisement of their names, no exception should be taken. Subsequently a letter was received from the Ministry of Health, stating that an approved society would not be entitled out of State Insurance funds to set up and maintain a clinic for dental work, although the case was different for a clinic established by a charitable organisation. The Ministry, however, was considering whether it might not be compelled to give a definite ruling on the extent to which departure from absolute freedom of choice of dentist could be allowed. The letter added that the Ministry hoped to get dental benefit on much better and more systematic lines after the second valuation now proceeding.

At the conclusion of the business Mr. Norman King was reappointed Registrar until Dec. 31st, 1924, and the best thanks of the Board were given to the Chairman for his able services during the present session.

Obituary.

ROBERT KENNEDY, M.A., D.Sc., M.D. Glasg., F.R.F.P.S. Glasg.

By the death of Robert Kennedy, St. Mungo professor of surgery at Glasgow, the city and University have lost one of their most distinguished professors and science a keen investigator. The loss is the greater as it follows so closely upon the death of other renowned Glasgow surgeons, notably Mr. James H. Nicol, Sir Kennedy Dalziel, and Sir William Macewen.

Robert Kennedy was born in Glasgow in 1865, and received his early education at the High School. He proceeded to Glasgow University, where in 1887 he graduated B.Sc., and the following year M.A. with first-class honours in natural science. In 1889 he became a Doctor of Science, and in 1890 qualified M.B., C.M. with commendation. He took the M.D. with honours, and in 1921 he was admitted F.R.F.P.S. of Glasgow. As a student he won the John Clarke and George A. Clarke scholarship in open competition. Previous to graduation in medicine he was assistant in zoology to the late Prof. John Young, and in botany to Prof. Bower. He also held the post of lecturer in embryology in the University of Glasgow under the Clarke foundation, and lecturer in biology in the Glasgow and West of Scotland Technical College.

In 1890, after graduation, he studied for over a year in the University of Berlin under many of the best known teachers, notably Virchow, Koch, von Bergmann, Olshausen, and Leyden. His study of bacteriology under Koch had, in consequence of the work of Lord Lister, become a necessary preparatory training to the practice of antiseptic and later aseptic surgery. On his return to Glasgow Prof. Kennedy held many important surgical posts. From 1892–96 he was surgeon to out-patients in the Victoria Infirmary until appointed to the surgical staff of the Western Infirmary, where he eventually became visiting surgeon. In the Western Infirmary he was assistant to the late Dr. Patterson for ten years, and was at the same time assistant surgeon in the lock hospital and examiner in surgery at the University of St. Andrews.

In 1906 Kennedy was appointed lecturer in applied anatomy by the Glasgow University Court, and in 1911 the curators of the St. Mungo Chair of Surgery in the University selected him as its first occupant. This selection was inevitable in view of his extensive research in many directions, notably in the surgery of the nervous system. These researches were accepted by the Royal Society of London for publication in their Philosophical Transactions. In 1903 Kennedy's researches were considered of such importance by the French School of Surgery that a translation of them was published in "Chipault's l'Etat actuel de la Chirurgie Nerveuse." His work included many experiments on the restoration of paralysed muscle by means of nerve anastomosis, and on the restoration of coördinated movements after nerve-crossing with interchange of function of the cerebral cortical centres. He performed extensive investigations into nerve regeneration, and the restoration of coördinated movements after nerve section. Kennedy was a prolific writer; many of his papers were included in the Transactions of the Royal Society of Edinburgh, the Royal Philosophical Society of Glasgow, and in many other medical publications.

Lord Lister, referring to Kennedy's investigations into the regeneration of nerves, said: "The subject is of the highest scientific interest and of very great surgical importance, and it has consequently claimed the attention of distinguished investigators for many years past. It nevertheless remained involved in great obscurity till Dr. Kennedy, availing himself of favourable opportunities which occurred to him as a surgeon, so combined acuteness of observation with sound discriminating judgment as to solve completely, as it appears to me, the difficult problem." Dr. M. Bernhardt, professor of neurology in the University of Berlin, regarded Prof. Kennedy as one of several savants who must be specially reckoned in contributions to the nervous system, and he included Kennedy's work in his book, "Die Erkrankungen der Peripherischen Nerven."

Among his many other researches Kennedy introduced the operative treatment of birth paralysis of the arm, a new method of operation for the radical cure of inguinal hernia, a method for the radical cure of varicose veins, treatment of cicatricial deformities of the hand, exposure of nerves for operations for wry-neck, &c. During the war Prof. Kennedy, as surgeon-in-chief of the Shakespeare Hospital, and later of Bellahouston Hospital in the Ministry of Pensions, did invaluable work among the wounded, involving many hundreds of major surgical operations, including numerous cases of removal of bullets and foreign bodies from the brain.

But for his sudden and unexpected death he would have journeyed this year to Canada as a delegate to the British Association meeting at Toronto. The loss of his son and wife at so short an interval came as a severe blow to him, and no doubt hastened the end. Every sympathy is extended to his only daughter in her great loss.

His friend, Sir J. S. S., sends the following appreciation: "Prof. Kennedy enjoyed the friendship of a wide circle, and was closely identified with the literary life of Glasgow. He took the deepest interest in the abortive movement for the preservation of the Lister Ward in the Royal Infirmary, and was ever at the disposal of his professional brethren, and freely gave them the benefit of his unique experience. He was essentially a scientific surgeon, and he was constantly adding to his knowledge by keeping in touch with other schools and the methods of other specialists at home and abroad. He was intolerant of slip-shod methods, and followed personally the progress of each case, whether it occurred in the public wards of the Royal Infirmary or among his private patients. He disguised under a somewhat brusque exterior a tender and sympathetic heart, and his loss will be mourned by a countless number of patients who came to look upon him as a friend."

DONATIONS AND BEQUESTS.—By the will of the late Mr. Emil Teichmann, of Chislehurst, the testator left among other bequests £2000 to St. Bartholomew's Hospital "in remembrance of my son Oskar's student days"; £500 to the National Institute for the Blind; and £500 to the Chislehurst, Sidcup, and Cray Valley Cottage Hospital.—The late Mr. Frederick Shiers Smith, of Skipton, left by will £500 to the Skipton and District Hospital; £500 to the Leeds Infirmary; £500 for distribution between the Cancer Hospital, Fulham-road, the Middlesex Hospital Cancer Charity, the Gordon Hospital, Vauxhall Bridge-road, and St. Mark's Hospital, City-road.—By will the late Mr. Thomas Murphy, of Chesterfield, among other bequests left £10,000 to the Chesterfield Royal Hospital for a "Murphy Ward," with all necessary provision of staff and other accommodation.

Correspondence.

"Audi alteram partem."

SPINAL-CORD LESIONS IN PEMPHIGUS VULGARIS.

To the Editor of THE LANCET.

SIR,—I have recently examined portions of the central nervous system obtained from a fatal case of pemphigus vulgaris and have found definite pathological changes in the spinal cord. The changes were chiefly those of an invasion of the central canal with mononuclear cells which morphologically resembled fibroblasts. The central canal was presumably occluded in its whole length as the lesions were present to the same extent in all the sections of the cord examined. A few small hæmorrhages were found in the substance of the cord with a slight amount of perivascular, lymphocytic infiltration. No definite lesions were found in the other parts of the central nervous system examined. Efforts to transmit the disease to animals have, up to the present, not met with success, but the material used for the inoculations was glycerinated as no special precautions had been taken to collect it in a sterile manner. One animal only showed a transient weakness of one of the fore-limbs, and appeared to be ill for a few days; recovery seems, however, to have been complete.

I am, Sir, yours faithfully,
C. C. TWORT, M.D. Aberd.

Pathological Dept., St. Bartholomew's Hospital,
June 6th, 1924.

"INDUCTION" OR "CAUSE" OF CANCER.

To the Editor of THE LANCET.

SIR,—Sir Lenthal Cheatle is grieved because some of us have failed to realise that "the factors that induce carcinoma belong to quite a different category from those that cause it." He repeats this four times, in different words, in the course of his short letter. What we have said is that the agents with which we have induced cancer experimentally are the prime, proximate, or inciting causal agents as distinguished from secondary, mediate, or contributory causes, as far as the particular results are concerned. If we have sinned in confusing the words "induce" and "cause" we have done so in goodly company. Webster's dictionary, for example, gives as one of the meanings of "induce" "to cause."

If Sir Lenthal Cheatle, for whom and for whose contributions to the study of cancer I have a profound respect, would be so good as to give us half a dozen examples of diseases that can be *induced* by something which does not *cause* them, I will truly seek repentance and renounce my allegiance to the lexicographers.

I am, Sir, yours faithfully,
ARCHIBALD LEITCH.

The Cancer Hospital Research Institute, Fulham-road,
London, S.W. 3, June 7th, 1924.

TOXIC EFFECTS OF LOCAL ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—If Dr. P. Watson-Williams will turn again to my letter he will see that my reference to the advisability of always combining adrenalin with cocaine is preceded by the words: "It may, I think," whereby I intended to convey the impression that it was a suggestion I was making, rather than a rigid generalisation, the perils of which I am well aware of. For the point is, I know, one for debate. No one will, perhaps, quarrel with the dictum that, as a rule, and particularly in extensive anæsthetisations, adrenalin should always accompany cocaine. In the matter of light anæsthesia of the nose, however, as for examination purposes, the question is, as Dr. Watson-Williams quite correctly implies, not by any means so simple. In light sprays, adrenalin frequently sets up an annoying reaction, with sneezing and running at the nose, which I have known to last as long as 48 hours, and to be a cause of much bad language, directed, and with perfect justice, to the rhinologist's address. But, on the other hand, I have occasionally seen cocaine syncope follow even a trivial spraying of the nose with pure cocaine solution; the drug is then so rapidly and completely absorbed.

So there the problem stands, and each man must solve it for himself. Personally, I prefer a swearing patient to a fainting patient. But I am quite ready to admit that others may cherish the opposite opinion. May I add that syringing the nose with warm saline solution after adrenalin-cocaine spraying can, as a rule, but not always, be relied upon to avert any subsequent irritation. It is curious that so violent a reaction seldom follows the more continued anæsthetic applications needed for operation.

I am, Sir, yours faithfully,

Dan McKenzie.

Wimpole-street, Cavendish-square, W., June 6th, 1924.

GASTRIC AND DUODENAL HÆMORRHAGE.

To the Editor of The Lancet.

Sir,—Dr. A. C. Jordan's comments on Dr. A. F. Hurst's valuable communication on this subject merit a passing comment. Dr. Jordan's commentary on the relationship of gastric and duodenal disorder to primary disease in the ileo-cæcal region is, in my opinion, well founded, as is also his recommendation in regard to the use of enemata as an essential part of the treatment. Perhaps one reason why progress is made so slowly in unravelling the mystery of disease is the present classification of disease and the too restricted outlook arising from it. It is, I think, doubtful whether simple gastric or duodenal ulcer ever occur as primary conditions. Apart from the measures which are necessary in an emergency, treatment should be mainly directed to the primary defect in the ileo-cæcal region and colon. If the suggestions as to ætiology and treatment in Dr. Hurst's communication are considered along with the facts brought out in Dr. Jordan's letter, and investigations made continually by the light of that teaching, our knowledge of the ætiology and treatment of gastric and duodenal ulcers would, before long, be on a much higher plane than at the present time.

I am, Sir, yours faithfully,

Chalmers Watson, M.D.

Edinburgh, June 6th, 1924.

THE PSYCHOLOGY OF SEA-SICKNESS.

To the Editor of The Lancet.

Sir,—May I answer the questions of F.R.C.S. in your issue of May 31st in reverse order? In my opinion sea-sickness is always of psychical origin and this appears to be a widely accepted impression, seeing that all medicines recommended for the malady come under the category of nervous sedatives, while other remedies, such as looking in a mirror, are obviously for the purpose of auto-suggestion. I am fortunately able to answer his other question from psycho-analytical experience of patients. Even exclusively artificial feeding does not necessarily render a child immune from sea-sickness. One of my patients (an obsessional case), who is still undergoing psycho-analysis, chanced to work through a phantasy of feeding in his mother's arms and thus incidentally cured himself from being a very bad sailor indeed; yet he knew from information received that he had been "brought up on the bottle." He explained that he might well be nursed against his mother's breast while feeding from a bottle.

The situation is, however, not quite so simple. The essential factor for the development of excessive oral libido is over-stimulation of the mouth during infancy, perhaps by "dummies," the nurse's finger, and the child's own thumb, as well as the mother's breast; while the associated rhythmical respiratory heaving motion during feeding is too often supplemented or replaced by jigging the child to and fro or up and down, cradle-rocking, swinging, and so forth. The fact that F.R.C.S. and his son are good sailors may probably be ascribed to their nurses refraining from undue oral stimulation, or from abnormal rocking movements, or both.

I hope that it is unnecessary to add that this explanation of sea-sickness will never cure a patient suffering from it. To be effective, he must discover the explanation for himself, out of his own mind. Otherwise he will simply refuse to believe it, as indeed will most of your readers unfamiliar with psycho-analytical investigations.

I am, Sir, yours faithfully,

W. H. B. Stoddart.

Cavendish-square, W., June 6th, 1924.

ROCKEFELLER ENDOWMENTS AT HONG-KONG.

To the Editor of The Lancet.

Sir,—In your issue of March 1st (p. 465) it is stated that the Rockefeller Foundation allocated the sum of $250,000 to the Hong-Kong University for the chairs of medicine and surgery. Will you permit me to make the following corrections? On May 24th, 1922, the Foundation appropriated the sum of $500,000 for the endowment of the chairs of medicine and surgery. More recently, on Feb. 5th, 1924, the Rockefeller Foundation generously appropriated a further sum of $250,000 for a chair of obstetrics and gynæcology. The Hong-Kong University was founded in March, 1911, and opened in 1912 as a residential University for students of both sexes of all races, nationalities, and creeds, not as stated in your note for British subjects only.

I am, Sir, yours faithfully,

Kenelm H. Digby,

Dean, Faculty of Medicine, University of Hong-Kong.

April 23rd, 1924.

THE KASR-EL-AINY HOSPITAL AT CAIRO.

To the Editor of The Lancet.

Sir,—You are, I believe, wrong in thinking that the King of Egypt has opposed the project of building a new hospital and centre of medical education in Cairo. King Foad has always encouraged anything likely to benefit his country. The project has been discarded for the present by the advice of a special committee held to report on that subject. It may please you to learn that the King of Egypt has recently ordered the purchase of a tuberculosis sanatorium of 360 beds at Helouan, originally built by Baron Kioppe on the most modern lines. This sanatorium will shortly be ready to receive patients, pulmonary and otherwise, who will have an exceptional opportunity of cure or relief by heliotherapy.

I am, Sir, yours faithfully,

Cambridge, June 6th, 1924. I. Yousry, M.D.

DOMINIONS MEDICAL HOSPITALITY.

To the Editor of The Lancet.

Sir,—You printed last week a programme of the arrangements made by my committee for the entertainment of overseas visitors. Certain forms have been returned to me unsigned, making it impossible to comply with the wishes expressed on them. May I through your columns appeal for the names and addresses of the writers?

I am, Sir, yours faithfully,

A. E. Mortimer Woolf,

Hon. Secretary, Dominions Medical Hospitality Committee.

94, Harley-street, London, W., June 10th, 1924.

LEAD AND CANCER.

To the Editor of THE LANCET.

SIR,—The annotation under the above title on p. 1164 in your issue of June 7th, dealing with Prof. Blair Bell's address which appears in the current issue of *Public Health*, induces me to draw attention to the following information drawn from Table V. of the Supplement to the Seventy-Fifth Annual Report of the Registrar-General, Part 4.

Comparative Mortality Figures.

Group.	1910–12.		1900–02.	
	Cancer.	Lead.	Cancer.	Lead.
Lead manufacturers	80	123	81	102
Potters	80	22	74	10
Plumbers, painters	87	20	73	23
File-makers	78	10	57	56
Copper manufacturers . .	71	6	45	3
Gunsmiths	78	4	74	—
Printers	68	2	65	2
Glass-makers	81	2	71	8
Chemical manufacturers . .	71	—	85	3
Occupied and retired males	78	1	68	1
Clergy	45	—	48	—
Coal-miners	61	—	53	—
Shipbuilding	64	—	55	—
Slaters, tilers	117	—	71	—
Furriers, skinners	82	—	115	—

Here are stated for two decennial periods all occupational groups with comparative mortality figures from lead poisoning above the standard set by occupied and retired males. Out of nine groups, in 1900–02 only two were markedly low for cancer, while two were markedly high; in 1910–12 only one group, printers, is rather low, and only one, plumbers, is high. A few other groups with no cases of lead poisoning are also given in order to show that lower and higher cancer figures, with more pronounced variations in rise or fall, are to be found in other occupations than the "lead" occupations.

These data do not reveal the suggested connexion between cancer and lead poisoning.

I am, Sir, yours faithfully,

EDGAR L. COLLIS.

Welsh National School of Medicine, Cardiff,
June 10th, 1924.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WHITSUNTIDE ADJOURNMENT.

ON June 6th the House of Commons adjourned for the Whitsuntide recess until Monday, June 16th.

THE HOUSING PROPOSALS.

On June 3rd the House went into Committee on the money resolution on which to found the Housing (Financial Provisions) Bill, Mr. R. YOUNG, Chairman of Committees, in the chair.

Mr. CLYNES, Lord Privy Seal, formally moved the following resolution :—

> That it is expedient—
>
> (*a*) To authorise the payment, out of moneys provided by Parliament, of contributions towards the expenses incurred in connexion with the provision of houses of the type and size mentioned in Subsection (2) of Section 1 of the Housing, &c., Act, 1923, which are completed before the first day of October, 1939, not exceeding in the case of any house which is subject to special conditions, whether as regards rent or lettings or disposal or otherwise, a sum of £9, or (if the house is situated in an agricultural parish in England or Wales, or in a rural area in Scotland) a sum of £12 10*s.* payable annually for a period not exceeding 40 years, and in the case of any house which is not subject to such special conditions a sum of £6, payable annually for a period not exceeding 20 years; and
>
> (*b*) To make provision as to such special conditions and, in the case of houses which are subject to special conditions, to provide for the reduction or variation of the contributions in the event of any of the special conditions not being complied with; and
>
> (*c*) To make provision for the withholding of contributions or the reduction or variation of contributions except in the case of houses completed before certain dates; and
>
> (*d*) To make provision for the amendment of the financial provisions of the Housing, &c., Act, 1923, and for other purposes incidental thereto or connected therewith.

Mr. WHEATLEY, Minister of Health, in explaining the Government's housing proposals, claimed that the Act of 1923 had been a complete failure. Something like 100,000 new houses per annum would be required to prevent the housing shortage increasing. On May 1st of this year 4645 houses had been completed and 12,738 were under construction, making a total of 17,383 either completed or under construction by local authorities for the purpose of letting. Assuming that all the houses were completed by Oct. 1st, the fact would remain that the housing conditions of the people who lived under the worst conditions in this country were considerably worse than when the present Act was introduced about 12 months ago. Not a single one, so far as he could ascertain, of the 32,000 houses being erected by what was called private enterprise was for the purpose of letting to the people who were so much in need of houses. His scheme, so far as the building industry was concerned, would work automatically. At the end of three years' building they would take stock, and if the average output of houses agreed upon between the State and the industry was not maintained then the agreement automatically terminated. On the other hand, if the output of houses was maintained the agreement automatically proceeded for a further period and they took stock again, and so on to the end of the 15-year period, when they would have produced 2,500,000 houses. The building industry had pointed out to him that they could not continue to give houses at present prices unless the prices of materials were maintained at their present level. That seemed perfectly reasonable. He had drafted a Bill by which he would ask Parliament to give him drastic powers for dealing with profiteering in building materials. The brick manufacturers had intimated that they were prepared to take the price of January, 1924, as the basis of the price for future building under his scheme. They were also prepared to see it enacted in an Act of Parliament that it should be an offence or the basis of investigation of an offence that a price was charged by any manufacturer higher than that charged in January, 1924, unless they could prove that the increase was justified by reason of increased wages or similar cause. He did not think that the nation could get a more generous offer. It was further proposed to set up three committees. One would be composed of builders and operatives, another of manufacturers of materials and merchants, and the third was a prices survey committee. These three committees would be interlocked by three representatives of each sitting on a super-committee, a national building committee to be set up by the Ministry of Health. There would be no representatives of the local authorities or the State on these committees because they would act simply in an advisory capacity. The subsidy for which he asked the sanction of Parliament was £9 a house per annum for 40 years and in defined agricultural areas of £12 10*s.* per house per annum. The amount of the subsidy was to be revised every three years, not for the houses that had been built, but in the light of existing circumstances for the houses of the future. In one respect he was sorry that he had to yield to the local authorities. They insisted that he would not interfere with the size of houses laid down in the 1923 Act. He would have liked to add 100 ft. to the maximum. He found that within their discretion, which was from 550 ft. to 950 ft., the average size of houses being built by local authorities in England and Wales was 817 ft.

The House went into Committee on June 4th and resumed the discussion of the money resolution on which to found the Housing (Financial Provisions) Bill.

During the course of the discussion Mr. WHEATLEY accepted an important amendment, moved by Sir G. MCCRAE, the Liberal Member for Stirling and Falkirk, to paragraph (*c*) of the resolution providing, in the absence of adequate arrangements, for the necessary increase in the supply of labour and materials at reasonable prices, for the withholding of the subsidy, or the reduction or variation of the subsidy except in the case of houses complete before a certain date.

The resolution as amended was agreed to.

Housing Bill Introduced.

On June 5th the House considered the money resolution in connexion with the Government's Housing Bill, which was agreed to in Committee with an amendment on the previous day.

Mr. WHEATLEY moved an amendment which he said arose out of the amendment agreed to on the previous night. If they were to proceed with the resolution as it stood, it would exclude certain contingencies under which they would want to suspend the operations of the Act. He had submitted the words he proposed to move both to the mover of the amendment (Sir G. McCrae) and to Mr. Neville Chamberlain. His amendment was to insert in paragraph (*c*), after the words "to make provision in," the following words: "Certain contingencies including contingencies which may arise in." The effect, he said, was not to confine the powers of the Government to the shortage of labour and materials, but to leave them in the wider sense while including the amendment carried on the previous night.

The amendment was agreed to and the resolution as amended was agreed to.

Mr. Wheatley then, amid cheers, brought in the Housing (Financial Provisions) Bill, which was read a first time.

Wednesday, June 4th.

Cost of Health Insurance Central Administration.

Mr. Trevelyan Thomson asked the Minister of Health what was the cost of the central administration of National Health Insurance benefits for insured persons—i.e., by the Ministry of Health, the Welsh Board of Health, and the Scottish Board of Health respectively.—Mr. Wheatley replied. The approximate total cost of the central administration of National Health Insurance (including expenses incurred by other Government departments and certain amounts recoverable from insurance funds) in the year 1923 was as follows :—England : Ministry of Health, £871,000 ; Wales : Welsh Board of Health, £70,000 ; Scotland : Scottish Board of Health, £123,000.

Subsidised Midwives for Rural Areas.

Mr. Black asked the Minister of Health whether, in the interest of the preservation of the lives of mothers and new-born babies, he would make it a statutory obligation upon county councils to provide a sufficient service of subsidised midwives to cover the necessities of the whole of the rural areas of Great Britain.—Mr. Wheatley replied : I could not undertake to introduce legislation for this purpose at the present time. The large majority of county councils are already exercising their present powers by aiding the provision of midwives in rural areas, and I am willing to consider any proposals for additional assistance in this direction. I propose shortly to issue a circular calling attention to the necessity for an efficient midwifery service in every area.

Sanatoriums for Advanced Consumption Cases.

Mr. Black asked the Minister of Health how many sanatoriums for the reception of incurable and dying cases of tuberculosis there were in Great Britain and what proportion of such cases died away from public institutions of this character.—Mr. Wheatley replied : Of the institutions which I have approved for the treatment of tuberculosis in England and Wales, 99 are available wholly or mainly for the reception of advanced cases of the disease. The majority of the remaining institutions, other than children's institutions, also admit a proportion of advanced cases. As regards Scotland, a question should be addressed to the Senior Secretary for Health for Scotland. I cannot say what proportion of deaths from tuberculosis occur elsewhere than in approved sanatoriums, but in 1922 approximately two-thirds of the total deaths from tuberculosis in England and Wales occurred elsewhere than in institutions.

Ex-Service Men and Tuberculosis.

Mr. Pielou asked the Minister of Health the number of ex-Service men who had died during the last nine years from tuberculosis as a result of their war service.—Mr. F. O. Roberts replied : The number of ex-Service men who have received an award from the Ministry of Pensions in respect of tuberculosis and who have died from that disease is, I regret to say, 15,770.

Thursday, June 5th.

Births and Deaths Registration Bill.

Lieut.-Colonel Fremantle introduced the Births and Deaths Registration Bill, a measure to amend the law relating to certification of still-births and deaths and the disposal of the dead. The Bill, which is supported by a doctor and a lawyer from each political party, was read a first time.

Examination of Young Persons for Factory Work.

Mr. Graham White asked the Home Secretary if it was his intention to raise the age of examination of young persons for factory employment from 16 to 18 in order to link up the inspections under the Factory Act with that of the school medical services and other public health services.—Mr. Henderson replied : I have decided, after consultation with the Ministry of Health, to include in the Factories Bill the recommendation in favour of raising the age which has been made by the Departmental Committee presided over by my hon. friend the Parliamentary Under-Secretary of State for the Home Office. The hon. Member will find the provision in Clause 91 of the Bill.

Danger to Health of Pneumatic Tools.

Mr. Benjamin Smith asked the Home Secretary whether his attention had been called to the injury to health suffered by men using pneumatic tools ; and whether he would cause an inquiry to be held into the matter.—Mr. Henderson replied : I received recently a communication on this subject from the Transport and General Workers' Union, but no definite evidence of injury has so far been furnished. I will have the matter looked into, but I shall be glad if the hon. Member can supply me with particulars of actual instances of workmen who have suffered injury to health from this cause with a view to facilitate inquiry.

Children and Poor-law Relief.

Mr. Graham White asked the Minister of Health if he would give, as on the last convenient date, the number of children who were in receipt of Poor-law relief owing to the unemployment of their parents.—Mr. Greenwood replied : The number of children under 16 years of age in England and Wales dependent upon parents who were in receipt of Poor-law relief on account of unemployment was about 250,000 in March of this year.

Nursing Service in Mental Hospitals.

Mr. Hore-Belisha asked the Minister of Health whether the Departmental Committee on the Nursing Service in Mental Hospitals had yet reported ; and, if so, whether the report would be published.—Mr. Greenwood replied : The report is nearing completion and will be published as early as possible.

Mr. Buckle asked the Minister of Health whether, in the case of the additional London County Council asylum about to be opened in the neighbourhood of Epsom under the name of West Park Mental Hospital, he would say whether it was intended for the care and treatment of certified patients ; what accommodation it would afford ; and whether voluntary boarders were to be admitted.—Mr. Greenwood replied : The answer to the first part of the question is in the affirmative. The institution will provide accommodation for 1732 patients. My right hon. friend regrets that the law does not allow voluntary boarders to be admitted for treatment in public mental hospitals.

Physical Condition of Army Recruits.

Mr. Thurtle asked the Secretary of State for War whether he was aware that, in the year 1921–22, out of 106,954 persons offering to enlist, 59,736, or 56 per cent., were rejected for physical reasons, whilst in the year 1912–13 only 2·7 per cent. were so rejected ; and whether he could give any reasons for the difference.—Mr. S. Walsh replied : The percentages of rejection are 56 per cent. and 27 per cent., not 2·7 per cent. The higher percentage of rejection in the later year is no doubt the effect of war conditions upon the physique of the population, but I am glad to say that the quality of the recruits now coming forward is steadily improving.

Friday, June 6th.

Departmental Committee on Health Insurance.

Sir John Marriott asked the Minister of Health whether the Inter-Departmental Committee on Health and Unemployment Insurance (1922) was still in being ; whether that Committee had presented any reports since that dated March 17th, 1922 ; whether any further or final report from the Committee might be expected, and, if so, when.—Mr. Greenwood (Parliamentary Secretary Ministry of Health) replied : The answer to the first part of the question is Yes. The Committee presented a third interim report on Feb. 23rd, 1923. No further report has been prepared and it is doubtful whether the Committee can profitably resume its deliberations having regard to the fact that a Royal Commission is about to be appointed to investigate the working of the system of health insurance, and that modifications of the Unemployment Insurance Scheme are also under consideration.

Medical News.

University of Cambridge.—It was announced by the Vice-Chancellor on June 10th that Sir Jeremiah Colman had given £2000 to establish a library for the School of Biochemistry.

University of Oxford.—The following candidates passed in the recent examination :—

Diploma in Public Health.—Part I. : Capt. T. O. Thompson, D.M., St. John's College. Part II. : J. G. Johnstone, B.M., and Capt. T. O. Thompson, D.M., St. John's College.

In Convocation on June 3rd the reappointment was approved of Dr. E. W. Ainley Walker, Fellow of University College, as Dean of the Medical School. In congregation, on the motion of Regius Professor of Medicine, Sir Archibald Garrod, a proposal was accepted to lend £4000 from the Special Reserve Fund to extend the Department of Human Anatomy in order to house the Rolleston collection of crania and skeletons and to provide suitable laboratories for the instruction of students in physical anthropology.

University of London.—In the Final Examination for the degree of M.B., B.S., held last month, the honours list is as follows :—

Kathleen D. Arnsby (*b*), London (R.F.H.) School of Medicine for Women ; E. Gallop (*a*, *e*), St. Bartholomew's Hospital ;

Dorothy Gibson (*a*, *d*, University Medal), London Hospital; W. O. C. Jarratt (*d*), St. Thomas's Hospital; J. Maxwell (*a*, *e*), St. Bartholomew's Hospital; A. T. Rogers (*d*), Guy's Hospital; W. P. H. Sheldon (*a*), King's College Hospital; Hilda N. Stoessiger (*b*), London (R.F.H.) School of Medicine for Women; T. C. Summers (*d*), London Hospital; H. F. Walker (*e*), Middlesex Hospital.

(*a*) Distinguished in Medicine. (*b*) Distinguished in Pathology. (*d*) Distinguished in Surgery. (*e*) Distinguished in Midwifery.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The Croonian lectures will be given by Sir Leonard Rogers on June 17th, 19th, 24th, and 26th, the subject being Researches on Leprosy and their Bearing on the Treatment of Tuberculosis. The Bradshaw lecture will be given by Dr. F. John Poynton on Nov. 4th on the Prevention of Acute Rheumatism. The Mitchell lecture will be given by Sir StClair Thomson on Nov. 6th on Tuberculosis of the Larynx, and its Significance to the Physician. The FitzPatrick lectures will be given by Dr. Charles Singer on Nov. 11th and 13th on the History of Anatomy. The above lectures will be delivered at the College, Pall Mall East, at 5 P.M. The Lloyd-Roberts lecture will be delivered at the Medical Society of London, 11, Chandos-street, W., by Dr. Herbert R. Spencer, on Nov. 19th, on the Renaissance of Midwifery.

CONFERENCE ON INFANT WELFARE.—The Third English-speaking Conference on Infant Welfare will be held at Caxton Hall, Westminster, on July 1st to 4th, under the auspices of the National Association for the Prevention of Infant Mortality and the National Baby Week Council.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—It has been arranged to hold in July a two weeks' course in ophthalmology (July 7th to July 18th) at the Royal Eye Hospital, Southwark. The ground covered will include clinical cases, followed by a lecture on subjects of particular interest to those engaged in the study of ophthalmology. Also a fortnight's intensive course (July 21st to August 2nd), including all the special and general departments of medicine and surgery at the North-East London Post-Graduate College (Prince of Wales's General Hospital, Tottenham). There will be the following courses in August: Diseases of children at the Queen's Hospital for Children; diseases of the chest at the Brompton Hospital (both courses date from August 11th to August 23rd) and neurology at the West End Hospital for Nervous Diseases (August 18th to Sept. 6th). Copies of the syllabus of the above courses with full particulars can be obtained from the Secretary, Fellowship of Medicine, 1, Wimpole-street, W.1.

LONDON HOSPITAL.—On June 4th a framed testimonial, a gift of the Carnegie Hero Fund, was presented by Lord Knutsford to Mr. Ernest Harnack in recognition of his work in connexion with the X ray department. Mr. Harnack entered the radiographic department in 1897, and in carrying out his pioneer work he lost both his arms. In these early days the opacity of lead glass to X rays was not known. Mr. Harnack also received a grant of £75 a year from the Carnegie Hero Fund, in addition to the £285 a year given by the hospital. At the same meeting Lord Knutsford announced that a special department for sun-bath treatment for general tuberculosis was to be erected; he also stated that Sir H. M. Mallaby-Deeley, in place of his original offer of £10,000, had offered a further £15,000 under certain conditions for the massage department. It was also stated that a special research department was being organised under Dr. George Riddoch, assisted by Dr. Henry Head.

THE MINISTER OF PENSIONS IN IRELAND.—Our Irish correspondent writes:—Mr. F. O. Roberts, British Minister for Pensions, accompanied by Mr. J. W. Muir, Parliamentary Secretary, has been paying a visit to Ireland, south and north, during the Whitsuntide recess. In his speech to a gathering of ex-Service men Mr. Roberts stated that there was something wrong with the work of the Ministry when, in so high a proportion as 60 per cent., appeals to the Pensions Appeals Tribunal were successful. Mr. Muir, in reply to criticisms concerning medical boards, said that the Ministry wished it to be understood that they did not want medical men to make their assessments from any point of view of economy, or any other point of view than the merits of the cases. They wanted every medical board to act independently of any other medical board in the country, and not to consider how its average of assessments would compare with the average of any other board. In cases where there was any doubt, they wanted the benefit of the doubt to be given to the men, and they wanted that to be understood by all their officers. If, however, the Ministry does not wish for any approximation to the average in the work of individual boards and areas, it is not easy to see why the central office is so assiduous in drawing the attention of local administrators to variations from the average. Mr. Roberts visited the Ministry's Orthopædic Centre at Blackrock, and paid a high compliment to the surgical work performed there.

Dr. R. A. Lyster, county medical officer of health for Hampshire, has been elected President of the Society of Medical Officers of Health for the session 1924-25.

EUGENICS EDUCATION SOCIETY.—To-day (Friday), at 3 P.M., Dr. W. A. Potts, of Birmingham, will open a conference on the Desirability of Greatly Increased Institutional Accommodation for Mental Defectives, to be held at the rooms of the Royal Society, Burlington House, Piccadilly, London; Major Leonard Darwin, Sc.D., will be in the chair. Members of the society and all interested are invited to attend.

ORDER OF THE HOSPITAL OF ST. JOHN OF JERUSALEM.—The following members of the medical profession have received promotion in the Order: Serjeant-Surgeon Sir Richard Havelock Charles to be Knight of Justice; Lieut.-Colonel G. H. L. Hammerton, R.A.M.C. (T.F.), Sir Robert W. Philip, Lieut.-Colonel G. Horne, and Colonel Sir Thomas Oliver to be Knights of Grace; Dr. S. M. Hebblethwaite, Surgeon Lieut.-Colonel J. H. Hacking, Surg.-Commander G. O. M. Dickenson, R.N., Dr. A. S. Allan, Dr. A. D. Cameron, Lieut.-Colonel H. Ross, I.M.S., and Colonel Sir Edward N. Thornton are appointed Esquires.

UNIVERSITY OF DURHAM MEDICAL GRADUATES ASSOCIATION.—The annual general meeting will be held on Thursday, June 26th, at 4.30 P.M., at the rooms of the Medical Society, 11, Chandos-street, Cavendish-square, London, W. Following the ordinary business of the meeting Dr. G. de B. Turtle will read a short paper entitled An Attempt to Classify Certain Types of Pyrexia. A small informal dinner will be held the same evening at the Criterion Restaurant, Piccadilly-circus, at 7.45 (price of the tickets 10*s.* 6*d.*, exclusive of wines, which sum will be collected at the table). Any member wishing to attend will greatly facilitate the work of Dr. F. W. M. Pratt, the secretary, 15, Clarges-street, Mayfair, W. 1, by replying before June 16th.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The election of President, Vice-President, and Council and Secretary of the Royal College of Surgeons in Ireland was held on June 2nd. The following were elected:—President: Mr. Richard C. B. Maunsell. Vice-President: Mr. Andrew Fullerton. Secretary of College: Sir Frederick C. Dwyer. Council: John B. Story, Sir Thomas Myles, Major-General R. H. S. Sawyer, Arthur W. W. Baker, Sir Arthur Chance, Sir Robert H. Woods, Richard Lane Joynt, Thomas Eagleson Gordon, Sir Frederick C. Dwyer, Alexander J. Blayney, Sir William Taylor, Trevor Nathaniel Smith, Seton Pringle, Sir William I. de Courcy Wheeler, Sir C. Arthur K. Ball, Richard Atkinson Stoney, Edward Sheridan, William Pearson, Adams A. McConnell. Mr. Maunsell is a graduate in medicine and surgery of the University of Dublin, and for several years held the position of University examiner in surgery. He has been a Fellow of the Royal College of Surgeons since 1900, and was elected to the council in 1904. Two years ago he was unanimously elected to the position of vice-president. Mr. Maunsell is the senior surgeon to Mercer's Hospital, having been appointed to the staff of that hospital in 1898, and lectures and writes on surgical subjects. During the war Mr. Maunsell for a time served in France as surgical specialist to the Dublin 83rd General Hospital.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, June 17th.

SPECIAL GENERAL MEETING OF FELLOWS: at 5 P.M.
To be followed immediately by a
GENERAL MEETING OF FELLOWS:
Ballot for election to the Fellowship.

Thursday, June 19th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)
Cases:
Dr. G. Pernet: (1) Porokeratosis; (2) Extensive Dermatitis Factitia.
Other cases will be shown.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, W.

THURSDAY, June 19th.—8.15 P.M., Annual General Meeting, preceded by a Demonstration at 7.45 of Leishmania and Other Allied Flagellates.

The paper, illustrated by lantern slides, will be read by Lieut.-Colonel T. McCombie Young, I.M.S., on Fourteen Years' Experience with Kala-Azar Work in Assam.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W. 1.

Monday, June 16th, to Saturday, June 21st.—Chelsea Hospital. Daily Operations, &c. Mon., 2 P.M., Mr. L. C. Rivett: Lecture Dem., Procidentia. Tues., 2 P.M., Mr. Victor Bonney: Dysmenorrhœa. Wed., 2 P.M., Mr. Stanley Dodd: Extra-Uterine Gestation. Sat., 11 A.M., Mr. Aubrey Goodwin: Path. Dem.—Children's Clinic. Mon., 2 P.M., Dem. of Cases. 2.30 P.M., Mr. Winsbury White: Stone in Children. 4 P.M., Prof. Lovatt Evans: Acidosis. At College Farm, Finchley, Tues., 2.30 P.M., The Production of Certified Milk on a Model Farm. 3.30 P.M., Dr. Bernard Myers: The Feeding of Infants and Older Children. At Children's Clinic, Thurs., 10 A.M., Dem. of Cases. 11.30 A.M., Dr. T. Joekes: The Blood Diseases of Children.—London School of Tropical Medicine. Tuesdays and Thursdays at 2 P.M., Demonstrations on Diseases of Tropical Countries.—Royal Northern Hospital, in conjunction with the Royal Chest Hospital, City-road. Special Course in Intensive Medicine and Surgery (first week).—St. Peter's Hospital for Stone. Clinical work and special Lectures daily (first week).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, June 16th.—12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Bishop Harman: Eye Dept.

Tuesday.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair; Surgical Out-patients.

Wednesday.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients. 2 P.M., Dr. Pernet: Skin Dept.

Thursday.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Dr. Scott Pinchin: Diseases of Heart. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

Friday.—10 A.M., Mr. Dudley Buxton: Dental Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

Saturday.—9.30 A.M., Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

Post-Graduate Course.

Monday, June 16th.—12 noon, Dr. Riddoch. Lecture: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Birley. Lecture: Subacute Combined Degeneration of the Cord.

Tuesday, June 17th.—12 noon, Dr. Greenfield. Lecture: Cellular Reaction in Nervous System. 2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Risien Russell. Lecture: Myasthenia Gravis.

Thursday, June 19th.—12 noon, Dr. Riddoch. Lecture: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Syphilis of Nervous System.

Friday, June 20th.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Physical Exercises.

Applications should be addressed to the Secretary, Medical School, National Hospital for the Paralysed and Epileptic, Queen-square, London, W.C. 1.

J. G. Greenfield, Dean.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN.

Tuesday, June 17th.—5 P.M., Dr. Knowsley Sibley: Electro-Therapeutics.

Thursday.—5 P.M., Dr. Griffith: Primary Lesion of Syphilis.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

Thursday, June 19th.—5 P.M., Mr. Richard Lake: Middle-Ear Disease. (Geoffrey E. Duveen Lectures in Otology).

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES (3.30 P.M.)

Monday, June 16th.—(At the Shaw-street Hospital.) Mr. Leyland Robinson: The Fibroid Uterus.

Tuesday.—(At the Maternity Hospital.) Miss Nicholson: Syphilis, Antenatal and Postnatal.

Wednesday.—(At the St. Paul's Eye Hospital.) Mr. H. Haward Bywater: Some Clinical Cases.

Thursday.—(At the St. George's Hospital.) Dr. F. H. Barendt: Skin Cases.

Friday.—(At the Eye and Ear Infirmary.)

Appointments.

Cumming, J. K., M.B., Ch.B. Aberd., has been appointed Medical Officer of Health, Great Harwood.

Giffen, T. M., F.R.C.S. Edin., L.R.C.P. Edin., to be one of the Medical Referees under the Workmen's Compensation Act for the Districts of Birkenhead and Runcorn County Courts.

Gillies, P. H., M.B., C.M. Edin., County Medical Officer for Argyll.

Westminster Hospital: Price, Thomas C., F.R.C.S. Eng., Surgical Registrar; Lloyd, W. E., M.B. Lond., M.R.C.P. Lond., Medical Registrar.

Vacancies.

For further information refer to the advertisement columns.

Alton, Hampshire, Lord Mayor Treloar Cripples' Hospital and College.—Jun. Asst. R.M.O. £250.

Bahamas.—Bacteriologist and Asst. M.O.H. £600.

Barbados General Hospital.—Res. S. £330.

Barnsley, Beckett Hospital and Dispensary.—Sen. H.S. £220.

Buxton, Derbyshire, Devonshire Hospital.—Asst. H.P. £150.

Cardiff, Welsh National School of Medicine.—Lecturer in Special Sense Physiology. £750.

Dreadnought Hosp., Greenwich, S.E.—H.S. and H.P. Each £150.

Dundee, King's Cross Infectious Diseases Hospital.—Sen. R.M.O. £350.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.S. £125.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hong-Kong Government.—Two M.O.'s. Also Asst. Port Health O. Each £600.

Leeds City.—Chief Clin. Tuberculosis O. £900.

Leeds University, Dept. of Pathology and Bacteriology.—Lecturer in Chemical Pathology. £600.

Liverpool, Royal Southern Hospital.—Hon. Asst. P. and Hon. Asst. S.

Liverpool, Samaritan Hospital for Women, Upper Parliament-street.—Hon. Asst. S.

Llanelly Borough Education Committee.—Dental S. £500.

London Hospital Medical College.—University Chair of Medicine. £2000.

Manchester, Hulme Dispensary, Dale-street.—Res. M.O.

Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Sen. and Jun. H.S.'s. £130 and £100 respectively.

Manchester, St. Mary's Hospitals.—Three H.S.'s Each £50.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. Path. £250. Also R.M.O. £200.

Paddington Board of Guardians.—Res. Asst. M.O. £327 12s.

Putney Hospital, Lower Common, Putney, S.W.—Res. M.O. £150.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Sen. Res. M.O., Two Asst. Res. M.O's. £100 and £80 respectively.

Queen Mary's Hospital for the East End, Stratford, E.—H.P., 2 H.S.'s, Obstet. H.S., also H P. and Cas. O.

Rochdale Infirmary.—M.O. in charge of X Ray, &c., Dept.

Royal Chest Hospital, City-road, E.C.—P. in charge of Out-patients.

Royal Ear Hospital, Dean-street, Soho.—Registrar. £50.

Royal London Ophthalmic Hospital, City-road, E.C.—H.S. £150. Also 2 Refraction Assts. Each £100.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Non-Res. Cas. O. £150. Also Hon. P. to Out-patients.

St. John's Hospital for Diseases of the Skin, Leicester-square, W.C.—Pathologist. £100.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Clin. Assts.

Sheffield Royal Infirmary.—Ophth. H.S., H.S., Asst. Cas. O., and H.S. to Ear, Nose, and Throat Dept. Each £60.

Stockport Infirmary.—Sen. and Jun. H.S.'s £250 and £175 respectively.

University College Hospital, Gower-street, W.C.—Hon. Anæsth.

University of London.—External Examiners.

West Bromwich and District Hospital.—Res. H.S. £220.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., Res. Cas. O. Each £100.

Births, Marriages, and Deaths.

BIRTHS.

Anderson.—On June 4th, at Albyn-terrace, Aberdeen, the wife of William Anderson, F.R.C.S., of a daughter.

Beadon.—To Richard à Court Beadon, and Dr. Mary O'Brien Beadon, M.B., B.S., W.M.S.I., Superintendent, Govt. Victoria Hospital for Women, Madras, on 28th April, 1924—a son.

Hampton.—On June 3rd, the wife of F. Anthony Hampton, M.B., of Blue Spur, Chesham Bois, of a daughter.

Shattock.—On June 10th, at Mecklenburgh-square, to F. Mackenzie, M.B., B.S., wife of C. E. Shattock, M.S., F.R.C.S., of Harley-street, of a son.

MARRIAGES.

Aymer—Floyd.—On June 5th, at St. Andrews, Boscombe, Charles Alastair Aymer, M.B., to Winifred Eileen Floyd, adopted daughter of W. Child Clark, Esq., of Michelgrove House, Boscombe.

Dorgan—Stapleton-Bretherton.—On June 5th, at St. Mary's, Cadogan-street, Lieut.-Colonel James Dorgan, R.A.M.C., to Monica, daughter of the late Mr. and the late Hon. Mrs. Stapleton-Bretherton, of Rainhill, Lancashire.

Hayes—Herron.—On June 4th, in London, Reginald Hewlett Hayes, M.R.C.S., to Alice, widow of Kenneth Chester Herron.

Morgan—Relton.—On June 5th, at St. Matthew's Church, West Kensington, Robert William Morgan, M.D., to Grace, daughter of the late F. H. Relton.

DEATHS.

Allen.—On June 4th, at "Marchings," Folkestone, very suddenly, Colonel Sydney Glenn Allen, A.M.S. (retired).

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE FRAMINGHAM HEALTH AND TUBERCULOSIS DEMONSTRATION.[1]

COMMUNITY PREVENTION, CONTROL, AND TREATMENT OF DISEASES, AS CARRIED OUT AT FRAMINGHAM, MASSACHUSETTS, U.S.A.

By Ralph C. Matson, M.D.,
DIRECTOR OF THE NATIONAL TUBERCULOSIS ASSOCIATION, U.S.A.

One of the first essentials of community prevention, control, and treatment of disease is that of education. The official health agency, receiving its money by budget, is usually restricted in its expenditure, and either unable or unwilling to expend money in experiments or demonstrations. It is therefore the duty of non-official or volunteer health organisations to demonstrate the value of our present knowledge regarding disease prevention, control, and treatment. Practically all units of community schemes for disease prevention, control, and treatment now utilised in America, such as sanatoria, open-air schools, preventoria, the public health nurse, &c., were shown to be of value by non-official organisations, before public officials were willing to accept them and expend funds for their maintenance.

The Community Health and Tuberculosis Demonstration at Framingham, Massachusetts, is an example of what can be accomplished by demonstration by a non-official organisation. It was established on Jan. 1st, 1917, by the National Tuberculosis Association with the financial assistance of the Metropolitan Life Insurance Company, to show that by the expenditure of a sufficient amount of funds it was possible to diminish both morbidity and mortality from tuberculosis in a community with an average equipment for health work.

The Metropolitan Life Insurance Company is interested in tuberculosis because 16 per cent. of the deaths in the industrial department are due to this disease. In 1915 the Company paid $4,000,000 on account of 14,325 policy-holders dying from tuberculosis. Tuberculosis is responsible for approximately one in every ten deaths in America, and one in every three industrial deaths is due to this disease. The National Tuberculosis Association alone, and through its associated State and local organisations, is expending upwards of $5,000,000 annually in its efforts to prevent, control, and eliminate tuberculosis, and it is quite natural to ask, "Of what value are present-day methods of disease prevention and control, and is this enormous expenditure of effort and money worth while?" The story of Framingham answers the question.

The Scope of the Work Attempted.

Framingham was selected for the demonstration because it represented a typical American community of about 17,000 people, with an average death-rate, average population, and average conditions, socially and industrially. Moreover, the local officials, voluntary health and civic organisations, expressed a desire for the demonstration, and assured coöperation. The object of the demonstration was essentially to discover all cases of tuberculosis in the community, to determine the economic and social factors in disease causation with special reference to tuberculosis, to apply the best-known methods of treatment, to develop a comprehensive programme of prevention, and organise the community for disease prevention and health creation.

One of the first things undertaken at Framingham was to secure the coöperation of local physicians and townspeople; the former was accomplished by organising a medical club, before which important lectures and clinics were given, concerning various phases of the tuberculosis problem and related medical problems. This also developed certain standards for tuberculosis diagnosis, and elevated the methods of diagnosis and treatment of this disease. Besides it secured the support and coöperation of local physicians almost to a man. The coöperation of the people of Framingham was secured by acquainting them with the motives, methods, and practical objects of the demonstration by means of special literature, daily press articles, numerous meetings, and the appointment of local representatives on the National Committee and the organisation of many local committees, representing various community interests, such as a local executive committee, a local advisory committee, an exclusion committee (whose duty it was to detect an invasion of the community by migratory consumptives), an industrial health committee, an infant welfare committee, neighbourhood committees, &c.

The work began quite naturally with a series of investigations with reference to the incidence of tuberculosis infection and presence of the disease, the hygienic hazards, community resources, &c. Among the more important investigative activities may be mentioned:—

1. A general sanitary survey, including a survey of industrial hazards, school and factory conditions, including problems of general sanitation, cleanliness facilities, illumination, ventilation, heating, dust, fumes, safety devices, milk and food control, morbidity and mortality statistics.

2. Not only was the community's statistical background studied, but the people themselves were studied, by a sickness survey, designed to give a cross-section picture of the amount of disease of all kinds in the community and serve as a measure for comparing illness findings at the beginning, with similar findings at the end of the demonstration. This census was similar to the sickness canvasses and health censuses frequently conducted by life insurance companies, and was carried out by the trained agents of several large insurance companies, loaned for the purpose, assisted by trained nurses. This survey disclosed 1·8 per cent. incapacitating illnesses, 6·2 per cent. for all forms of illness, and only 0·24 per cent. tuberculosis (a point which shall be discussed later); 81·1 per cent. of the individuals recorded ill were receiving medical attention.

3. A number of medical examination campaigns were held. Not only industrial workers, but 14,000 of the 17,000 people living in Framingham, were given a thorough medical examination; this revealed an active tuberculosis present, in 1 per cent. of the population, with a prevalence of illness and disability of all kinds of 77 per cent.

4. A study of infant and child life in Framingham was made by visiting every home where a birth had taken place during the previous year, and recording certain essential prenatal, obstetric, and postnatal facts. A tuberculin survey was made by an expert on 460 children, ranging from 1 to 7 years of age. This was done to throw light, if possible, on the sources of childhood infection, and to select those most needing special care. It was also done to determine the reaction percentages of different nationalities, neighbourhoods, &c., as well as to determine the reliability of the tuberculin test in young age-groups as an index of tuberculous disease. This study revealed 33 per cent. positive reactions, which differed significantly in different race stocks. Of special interest are the findings in Irish and Italian race stocks. While the Italian stock gave the highest of positive reaction, very few cases of active tuberculosis were found among them either in adults or children. On the other hand, while the percentage of positive reactions among the Irish stock was low in Framingham, as elsewhere, the Irish stock contributes more than its share to the morbidity and mortality-rates. Re-examination of these children at subsequent dates disclosed no cases of demonstrable tuberculosis.

5. A careful investigation was made of the influenza sequelæ, which revealed many interesting things, among which was the relative degree of protection in the tuberculosis group, of which only 4 per cent. became afflicted with influenza, while 12 per cent. of the population at large was estimated to have had the disease. It is also interesting to note, in connexion with the incidence of influenza in race stocks, that while the tuberculosis incidence among the Irish was eight times that of the Italians, the Italians had an influenza incidence four times greater than the Irish.

6. A census was made of all individuals in Framingham, covering such environmental factors as hygiene, housing, economic status, &c.

7. A survey was made of tuberculosis infection among cattle supplying milk to Framingham.

"*Community Diagnosis*" *and* "*Community Treatment.*"

As a result of the foregoing activities a "community diagnosis" was made. This was followed by a "community treatment," the basic principle of which was to continuously encourage the community to meet its own health requirements and place the non-experimental phases of the demonstration on a permanent basis. The "community treatment" comprised a number of activities, the most valuable of which was an expert consultation service, offering consultations to local physicians, factory medical and nursing staffs on cases of suspected tuberculosis or respiratory infections. This resulted in earlier diagnosis of tuberculosis, tripled reporting of tuberculosis, and tremendously increased the number of tuberculosis cases disclosed. It also encouraged the search for early tuberculosis and examination of contacts. This latter procedure resulted in the establishment of summer camps for pre-tuberculous children, as well as the establishment of domestic economy and good hygiene education for families having tuberculosis or under-par children.

The community was thoroughly organised, not only for the control of tuberculosis, but for general health and disease prevention. This included general community sanitation, the promotion of infant welfare work, school health work, industrial health work, tuberculosis nursing, and a programme of education, which included lectures to mothers, and to industrial groups and health cinema programmes. These activities popularised health knowledge in the community and improved municipal methods of disease prevention, especially tuberculosis. The tuberculosis clinic was reorganised. Tuberculosis cases were placed under supervision as rapidly as they were discovered. Those requiring institutional care were sent to suitable sanatoria or hospitals, others were cared for in the dispensary or at home. The local board of health, the school committee, the Park Commission, the Framingham Hospital, the Civic League, and Red Cross were either developed or expanded, and aided directly or indirectly along financial and other lines.

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[1] A paper read at the First International Congress of the People's League of Health at Wembley on May 23rd, 1924.

The Changes which have Taken Place.

The foregoing is thus a brief sketch of the demonstration's purpose, its organisation, and activities. The changes which have taken place in Framingham may be summarised as follows. The demonstration is now in its last year, but has been so successful and convincing that the community has taken over all prenatal infant and pre-school work, all the school health work, and general health administration of the community, including tuberculosis nursing, tuberculosis and venereal disease clinic work, and to a large extent the health production and disease preventive activities in the industrial age-group; and, what is more significant, next year every activity undertaken in the demonstration and every suggestion made will be taken over as a community activity.

When the demonstration began, Framingham had only just appointed a full-time health officer, who had under his supervision the following activities: laboratory examinations, quarantine, care of tuberculosis cases, certain police duties, and a tuberculosis clinic. Within four years the board of health increased its budget 130 per cent. and established four infant clinics, one tuberculosis health station and clinic, with consultant on call at all times, one infantile paralysis clinic, one venereal clinic, a tuberculosis nurse visiting 100 patients, two infant and pre-school nurses visiting 450 babies, and three part-time infant welfare physicians.

Before the demonstration began there were 3039 children in Framingham schools with one part-time physician and one full-time nurse. Physical examinations were made only at request of the nurse. After five years of demonstration, at which time there was only a slight increase in the school population, the health organisation comprised one full-time physician, one nurse, one dental hygienist (who cleans mouths, holds tooth-brush drill, gives talks to classes, &c.), one dental clinic, and one director of physical education.

The Effect on Industrial Workers.

Naturally, the demonstration has evoked an intense interest in industry, as the highest death-rates are found in the industrial age-group. As a result of the demonstration, the devices for preventing accidents and procedures for improving the health of the workers have steadily increased. There are approximately 5000 industrial workers in Framingham, nearly half of whom are employed in one industry. When the health demonstration began the health work of this industry consisted of one nurse, one rest room, one-room clinic, a physician on call, and a sick benefit association. After five years of demonstration activity, the health equipment of this same industry consisted of one full-time physician, a three-room clinic, one full-time dentist, a dental clinic, two nurses, one rest room, complete surgical throat and ophthalmological outfits, and a sick benefit association assuring three weeks in the hospital in any one year if necessary. The plant was also organised on advanced democratic profit-sharing and management-sharing basis, with considerable participation in control by employees of different grades through industrial partnership, industrial associates, and shop committee devices. Compulsory examination of new employees is now carried out by the plant physician, this procedure being at the request of the works committee. It must be pointed out that medical and nursing facilities in industry can only functionate fully when developed and operated in very close coöperation with employer and employee, and should be used for the purpose of fitting the man to a job rather than as a means for rigidly weeding the unfit from industry. A Civic League was organised in 1917, and a year later opened its new building with a swimming pool and gymnasium open to the public. General health and educational work has been carried on regularly, and health clubs and community garden clubs are in operation. The two hospitals in Framingham have training schools and the student nurses assist in several important demonstration activities. One of these hospitals has a district nursing service.

The Park Commission has opened five playgrounds under the supervision of a physical director. General conditions in Framingham have undergone many constructive changes. The sewage system has been modernised, the milk-supply has been very much improved, the milk consumption has been doubled, and almost complete pasteurisation is in effect. Public spitting has been greatly reduced as a result of education and enforcement of city ordinances.

One of the most satisfying and significant results of the demonstration is the interest local physicians have taken in tuberculosis and their efforts to find new and early cases. This has been largely due to the highly efficient consultation service in charge of Dr. P. C. Bartlett, who with scientific skill and exceptional tact and judgment has made the service one of the most valuable features of the demonstration, and utilised by nearly all local physicians. The consultation service is not limited to tuberculosis work, but as far as possible it enters the field of general medicine. This service has attracted nation-wide attention, and is now in operation in Massachusetts, Illinois, New York, Oklahoma, Vermont, and Wisconsin.

The Results of the Investigations.

While the demonstration has been on a relatively small scale, it has revealed certain conditions, which one may say are representative of the average American community, and has brought out certain standards of community health work which can be advantageously applied to the country at large. Among the most important results of the investigative activities of the demonstration the following should be mentioned:—

1. In six years of demonstration the general death-rate has been reduced 16 per cent., the infant mortality-rate has been reduced 50 per cent., the tuberculosis death-rate 53·6 per cent. (the rates being corrected for non-residents and certification errors). While a reduction in these rates may have taken place anyway, or other factors were responsible, attention is invited to the fact that the death-rates in the towns about Framingham which were selected as control towns have experienced only slight reductions in the tuberculosis death-rate.

2. The examination of a representative population indicates that about 1 per cent. is suffering from active tuberculosis and an additional 1 per cent. from the disease in an inactive form. This corresponds to about ten active cases for every annual death in an average community. Therefore, in a city of 100,000 people there are probably 1000 cases of active tuberculosis. This is a percentage which has been substantiated by my own tuberculosis examinations of 174,000 American soldiers during the World War. Similar surveys in civil and military groups have given approximately the same percentage. (Of the first million American soldiers examined for military service in the World War 0·873 per cent. were rejected because of tuberculosis.)

3. These demonstration figures may well serve as a guide as to the percentage of tuberculosis which should be reported in a community. When the demonstration started at Framingham there were only 27 known cases of tuberculosis under care. The average ratio of reported cases to deaths was 3 to 1. After intensive search several hundred cases of tuberculosis were found and the ratio of reported cases to deaths was raised to approximately what it should be—namely, ten cases for every death. This means that a city with 100 deaths a year from tuberculosis should have reported approximately 1000 cases of active tuberculosis annually.

4. The number of cases requiring hospital or sanatorium care has been found to be one or two for every annual death in the community. Consequently a community should provide at least one, but preferably two beds for every annual death. One may estimate that about 42 per cent. of the total active cases under observation during the year will require institutional care. This will include, of course, many short stays in sanatoria or hospitals for educational and hygienic purposes.

5. In the beginning of the demonstration Framingham was equipped with a tuberculosis dispensary with a part-time nurse and medical attendant at the clinic. There was also an anti-tuberculosis society doing some educational work. This may be considered an average equipment for a city of 17,000 people. With this organisation as stated, the ratio of reported cases to annual deaths was 3 to 1. It is evident, therefore, that the average community reports little more than half the cases of tuberculosis and probably most communities report only about one-third. Consequently no effectual campaign can be waged against tuberculosis when only approximately one-third of the cases are under care, while two-thirds remain uncontrolled and potential sources of infection. This means that an efficient case-finding plan is necessary to bring the unknown half or two-thirds under supervision. In Framingham a sickness survey carried out by insurance agents and nurses disclosed some new cases after the health survey had been made. However, when practically the same area was canvassed and the residents given a thorough medical examination, nine times as much tuberculosis was found. Therefore, it is felt that routine medical examinations are necessary.

This can only be accomplished by means of an educational programme, which would have as its basis the evidence that in an average community about 90 per cent. of the population are infected with the tubercle bacillus, and of this 90 per cent. infected probably 2 per cent. have tuberculosis in an active or arrested state, but 10 per cent. will eventually die of the disease. Accordingly, the educational programme must teach how infection takes place, how children and others must be protected from massive infection by controlling open cases, improving general sanitation, and by the pasteurisation of milk-supplies. The educational programme must also teach that many cases can recover by proper institutional care, and there must be instilled into the community the idea of annual thorough medical examinations, which may be done at the clinic or by the family physician, with the help, if necessary, of the clinic, or consultation service, or by the factory or school physician, in the case of industrialists and children. It has been estimated that one factory or school physician is required for every 3000 individuals. An adequate nursing service must be provided also, of at least one nurse for every 2000 or 3000 people, to do infant welfare, school, factory, and home nursing, and follow up arrested cases of tuberculosis.

6. The consultation service is perhaps the most important single measure developed in Framingham for the discovery of tuberculosis. In addition to the foregoing, adequate institutional equipment, community organisation, and legislation are necessary.

It will thus be seen that tuberculosis in Framingham is being brought under control, and if these same methods could be applied to the entire United States it would mean a saving of 80,000 lives a year or more than were lost by the United States in the World War. It would prevent untold suffering and poverty, and when one considers the economic value of a human life, it is clear that, measured in the terms of money alone, the programme would mean a saving of millions of dollars annually.

Fundamental to the success of such a demonstration is the sympathetic coöperation and support of the local medical profession as well as the community in general. There must be created a strong sentiment for health work. The demonstration should be thoroughly grounded in the life, public affairs, and institutions of the community. It should show what scientific medicine is and what health movements are, and it should not permit itself to be regarded as a strange something, imported for the purpose of destructive criticisms and exposure of official and non-official agencies. Much of the credit for the success of the Framingham demonstration is due to the highly efficient service of its executive officer, Dr. D. B. Armstrong. The willingness and desire on the part of Framingham to develop and support an adequate health programme is reflected by the increased expenditure for health from 40 cents when the demonstration began to 2 dollars and 35 cents per capita last year.

Aside from local manifestations of benefit from the demonstration, its influence has been national in scope. It has stimulated scores of American communities to adopt new methods for discovering and caring for tuberculosis, as well as for infant welfare work. It has brought about the splendid big Millbank demonstration, which is applying the Framingham data to an entire county in New York State (Cataraugus), to a city of 175,000 (Syracuse), and to a district in New York City having a population of 216,000, and fairly typical of Greater New York City as to age-grouping, race stocks, birth- and death-rates, economic, social, and industrial conditions.

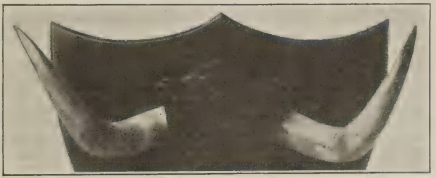
While the Framingham demonstration was primarily on tuberculosis, it has been very broad in its character. It has contributed to better health administration, better recreational facilities, better industrial relations and conditions. It has, in short, not been merely a medical demonstration; it has been a health and social demonstration to promote general healthfulness of the population at large, to prevent disease, reduce mortality, increase productiveness, and promote happiness.

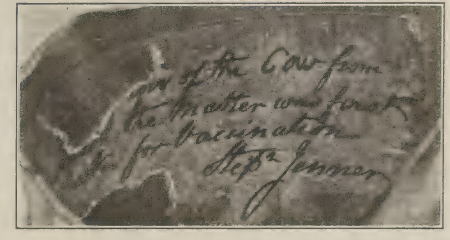
HOW CONSTANTINOPLE WAS CLEANED UP IN 1922.

IN the *Journal* of the R.A.M.C. for May Captain R. McKinlay tells the story of the sanitary difficulties which faced the Allies at Constantinople in 1922, when he was the executive officer of the Inter-Allied Urban Sanitary Commission, of which the British D.M.S. was president. Of the Inter-Allied Maritime Sanitary Commission the president was a French medical officer. The health of the city was a joint responsibility of the municipality and the Government, both near bankruptcy, unable to pay their staff, and so getting inferior service. The Turkish doctors, whose month's salary, long in arrear, was less than a skilled artisan in England gets every week, gave at first an impression of lethargy, but when they found themselves employed by people who took a real interest in their work and their welfare they worked well. The actual sanitary conditions were deplorable; water was insufficient in summer and bad (*B. coli* in 0·5 c.cm.), and people made it worse by dipping it out of main conduits in buckets. There was no conservancy; refuse was just cast out into the street. It took the Allies a year to get the city cleaned up, but by that time the inhabitants had found it cheaper to use sanitary dustbins than to pay fines. There were almost no drains, and those there were were badly built of brick, leaking and untrapped, and to these conditions the residents had learned to accommodate themselves, for "even in some of the best houses one is met by an intolerable odour, apparently not noticeable to the inhabitants." The scourges of Turkey are supposed to be three: tubercle, malaria, and venereal disease; how these were dealt with may be read in the paper. The overwhelming problem of Constantinople has been the refugees; groups amounting to over half a million are enumerated. They swelled the myriads of the prostitutes; "semi-starved and filthy, this vagrant population scattered vermin, often infected." This paper should be read in full for the graphic picture which it gives of sanitary problems in the Near East.

JENNER RELICS: THE HORNS OF THE FIRST COW TO SUPPLY VACCINE VIRUS.

AN interesting relic—namely, the horns of the cow from which the lymph was first taken for vaccination—is described in *Berrow's Worcester Journal* of May 24th, and by the courtesy of Mr. G. A. Turner, of Anderson and Virgo's Dispensing Establishment, Worcester, we are able to give illustrations of the horns. These were purchased from a furniture dealer of Barbourne, whose father has stated that the horns had been in the family for upwards of 80 years, and that they were bought from the grand-nephew of Edward Jenner, Mr. Stephen Jenner, in whose handwriting is the label on one of the horns. Mr. Turner has made exhaustive inquiries as to the history of the horns and has collected much evidence which, incidentally, includes a photograph of the son of Mr. Henry Phipps, of Berkeley, the first man who was ever vaccinated, and a photograph of the house where Jenner lived. He has verified the handwriting of Stephen Jenner, who was one of the attesting witnesses to the will of the discoverer of vaccination, and the signature is also confirmed by Mr. Scott, solicitor, of Gloucester, whose firm have acted for the Jenner family for a century. It may be noted that among other things which Mr. Stephen Jenner sold to the furniture dealer were some sketches in water colour of fresh-water fish said to have been drawn by Edward Jenner. There does not seem to have been any reference to these in the collection of Jenner relics sold at Messrs. Sotheby, Wilkinson, and Hodge's some 18 months ago (THE LANCET, July 29th, 1922, p. 260). It may be added that in the pathological department of St. George's Hospital there is a cow-hide which bears the inscription: "The skin of the cow from which the first vaccine matter was taken by Dr. Jenner. Presented by his son, October, 1857," and it is suggested that presumably the horns shown in the photograph belong to that hide. There is also in the Royal College of Physicians of London a horn which is stated to have belonged to a Jenner cow, the inscription being: "The horn of a cow given by the benefactor of man, Dr. Jenner, to his friend Sir John Fisher, and presented to this institution in 1813."





PUBLIC HEALTH IN NEW ZEALAND.*

THE report on Public Health in New Zealand during the 12 months ending March 31st, 1923, states that the census population in April, 1921, was found to be 1,218,913 (not including 52,751 Maoris); and that the mean population for 1922 (also exclusive of Maoris) was estimated to be 1,251,895, showing a percentage increase on the previous year of 2·29. The birth-rate (23·17 per 1000) was lower than in any year previously recorded except 1919, when it was 21·54 per 1000; though the *number* of births (29,006) was greater than in any year except 1920 (29,921). It may be presumed that these numbers and ratios refer to the calendar years mentioned. The infant mortality (under 12 months of age) shows a most marked and progressive improvement; in the decennium 1901–10, the ratio varied from 61·6 in 1909 to 88·8 in 1907; for 1911–20, from 45·3 in 1919 to 59·2 in 1913; in 1921 it was 47·8; and in 1922 41·9, the lowest on record.

An Epidemic of Enteric Fever.

There was no special incidence of infectious disease during the 12 months except an outbreak of enteric fever at Mount Albert, a suburban borough adjoining Auckland city, with a population of 12,500. The borough has its own water-supply from "a spring tapped at the bottom of a well which passes through volcanic scoria rock. . . . The catchment area . . . covers the slopes of an extinct volcano about 400 feet high . . . . A few lava streams come from the hill, and the spring is probably an old water-course, flowing from the hill, but covered with lava and scoria ash. These scoria beds vary in depth, being several hundred feet at the actual cone, but thinning off to nothing at the edges of the volcanic area. The stream forming the water-supply at Mount Albert is deeply covered throughout the catchment area. The lava beds are much broken and fissured . . . . It is difficult in such country to know what the actual catchment area is, as springs flow out from the cone in various directions; but on the possible catchment area there are now about 1000 houses, most of which have been built in the last five or six years." When the spring was first used about 12 years ago there were few houses on the catchment area and the water was very pure, both chemically and bacteriologically. The houses have increased in number; there are no sewers, drainage soaks into the very porous scoria soil, dumps being dug for the purpose. "As might be expected, this increase of population on the catchment area has been a source of anxiety to the Health Department, and a watch has been kept on the purity of the water for some years. Warning of diminished purity was sent to the Borough Council in 1913, but the water was not in such a condition as to cause serious alarm till November, 1921." The chemical and bacteriological analyses were, shortly, in January, 1921, albuminoid ammonia, 0·0023; chlorides, 3·1; nitrites, nil; nitrates, 0·43 per 100,000; oxygen absorbed in four hours at 80° F., nil; colonies on gelatine at 22° C., 49; on agar at 37° C., 24; *B. coli* not present in less than 5 c.cm. In November, 1921, *B. coli* was found in 0·1 c.cm.; colonies on gelatine, 127 per c.cm. (agar colonies not stated). The council were warned that the water was no longer safe, and chlorination was carried out; the smallest quantity containing *B. coli* was then (December) found to be 50 c.cm. The council reduced the amount of chloride added on account of complaints as to taste, and in March the medical officer recommended that it should be increased. Up to April 7th seven cases of typhoid had been notified in the whole metropolitan area, and there was nothing suggestive of an epidemic in any part of the Auckland district. On the 8th the first case of the epidemic in Mount Albert Borough was notified; on the 10th *B. coli* was found in 0·01 c.cm. water from the pump well (apparently at the Avondale Asylum); a number of cases of "gastric influenza" were reported in Mount Albert district. On the 13th the reservoirs were chlorinated and the mains flushed, and the city water then turned on throughout the area. On the 17th the inhabitants supplied from Mount Albert Borough station were warned to boil the water, and the public schools closed, as it was not possible to prevent the children from drinking unboiled water from the school taps. The progress of the epidemic was as follows: from April 3rd to 10th, one case; from April 10th to May 22nd the cases week by week numbered 23, 59, 35, 17, 11, and 5 respectively; there were four cases in the week ending June 5th, and one case near the end of the month. The cases numbered 156 from April 3rd to June 30th; and in addition to these there were 60 cases at the Avondale Asylum, commencing in the first two weeks of April. The total cases during the epidemic therefore numbered 216. The deaths appear to have been 14 in Mount Albert District and 17 in the asylum. The "spot map" referred to on p. 21 as showing "very conclusively how markedly the area supplied from the Mount Albert pumping well has been picked out by the incidence of the typhoid cases" is unfortunately omitted from the report. Otherwise this account of the typhoid outbreak and its causation, by Dr. R. H. Makgill, acting medical officer of health, Auckland, is most complete and convincing. "It is interesting to learn from the Government bacteriologist that infection was not confined to one organism of the enteric group, but that typhoid and both types of paratyphoid infection were detected. This is suggestive of a fairly widespread state of pollution on the catchment area."

Child Welfare and School Inspection.

Considerable progress has been made in regard to the important subject of child welfare; public lectures and demonstrations, addresses to teachers and midwives, mothers and young women, have been well attended. The average infantile death-rate for the whole Dominion has been reduced from 47 per 1000 births in 1921 to 42 in 1922, the lowest on record. "The Plunket Society has become practically part of the work of our hospitals." The Plunket nurses subsidised by Government have been increased from 60 to 71. Infantile diarrhœa and enteritis, that formerly killed from 10 to 20 babies per 1000 births, have fallen to three deaths per 1000; at Dunedin the mortality from this cause, which was 25 per 1000 in 1907, has been under one per 1000 for the quinquennium; at Christchurch the ratio has fallen from 45 to 3. Dr. Truby King, director of child welfare, remarks very forcibly that "it is much cheaper and easier to rear babies and calves rightly than wrongly," and quotes the aphorism of Socrates: "The beginning is the most important part, especially when we have to deal with anything young and tender." School medical inspection has been carried out under Dr. E. H. Wilkins as director, and Mr. T. A. Hunter as director of dental hygiene. Among 34,382 children examined 88·34 per cent. were found to have defects; defects other than dental were found in 60·40 per cent., dental decay was present in 67·16 per cent. Postural and structural deformity of the trunk and chest (26·03), enlarged cervical glands (11·25), enlarged tonsils (11·23), subnormal nutrition (7·41), and goitre (6·20) were the chief abnormalities detected. Vision was defective in 3·18, and hearing in 0·79 per cent. of the children. In the treatment of goitre with salts of iodine the results have been encouraging, about half the cases having derived considerable benefit. The school nurse is warmly welcomed by the majority of parents, but a much larger number of nurses is required.

Hospitals.—Native Population.

At the five hospitals and sanatoriums scattered over New Zealand a total of 1495 patients were admitted during the 12 months, April, 1922, to March, 1923; these, added to the 451 present at the beginning of the period, make a total of 1946 treated, the daily average present being 432; 1007 were cured or relieved, and 59 died. The Maori population (52,751) shows an increase of 2975 over the previous census of 1916. The proportion of females to males has risen from 832 per 1000 in 1891 to 890 in 1921; there are now 23·6 Europeans to one Maori. All the Maori health councils are in working order except those in South Island. The health of the native population shows an improvement over that of the previous year, "due in no small measure to the activities of the Maori health councils, under guidance of the native nurses and inspectors."

HEALTHY SOUTH AFRICA.

Mr. R. Gwelo Goodman is showing at the Royal Institute Galleries a record of ten years' painting in South Africa. It is a very interesting and varied show, and may be commended to medical men with an interest in a country which has so much to offer to health-seekers. The purity and clearness of the air and the generous sunshine are evident from the presentation of local detail in the distances of these fascinating pictures.

IS A "DENTAL WHO'S WHO" WANTED?

A SUGGESTION having been made that a "Dental Who's Who" on similar lines to "The Medical Who's Who," confined to licentiates and graduates in dental surgery, would be welcomed, the Grafton Publishing Company is inquiring to what extent the dental profession would be willing to coöperate before committing themselves to the heavy expenses involved in bringing out the first edition which probably could not be issued under 15*s.* 6*d.* It would be revised and published annually. Should the replies received by the Company at Chichester House, Chancery-lane, London, warrant the undertaking, a "particulars form" will be forwarded in due course.

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* Wellington: Government Press. 1923.

Huxley Memorial Lecture

ON

BIOCHEMISTRY:

ITS PRESENT POSITION AND OUTLOOK.

Delivered in the University of Birmingham on May 29th, 1924,

By F. GOWLAND HOPKINS, M.B., D.Sc.,
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Mr. Principal, Ladies, and Gentlemen,—Let me first express my appreciation of the high honour done to me by the invitation to deliver this Huxley Memorial Lecture. The great English scientific worker and writer whom we commemorate did not in his own person contribute to the branch of knowledge which we are to consider, but it is a pleasure to know —as I do know—that in his later years he took much interest in it and believed in its importance.

The effective and continuous application of chemical methods and chemical thought to the problems presented by living plants and animals began somewhat suddenly when the nineteenth century was already well advanced. Such effective applications were first due to Justus v. Liebig, who as a biochemist seems to me to have had no predecessor in any sense that is real. Biochemistry as a body of knowledge owes, I think, almost nothing to ancient thought. The keen edge of the Greek intellect scarcely touched its particular problems as they now present themselves to us, for the sufficient reason that it possessed no data which would suggest that the problems, as we view them, even existed. The conscience of the historian of knowledge may, it is true, lead him to point to the iatro-chemists of the sixteenth century as predecessors of the modern biochemist; but if we do not let piety submerge our honesty, we must, I think, admit that the interest with which we read the outpourings of Paracelsus, and even the saner teachings of Van Helmont, is the kind of interest which attaches to the precocities of childhood. Such men, it is true, had intellectual predilections which may make them prototypes of the modern biochemical inquirer. Paracelsus, for instance, was, as Michael Foster said, "a chemist to the backbone," and he believed that through chemistry medicine was to become rationalised. But from his equipment facts were sadly absent and his teaching in consequence was sterile. Real appraisement, devoid of that sentimentality which often gives bias to history, will, I think, compel us to admit that there is no continuity between the thought of these so-called iatro-chemists and modern thought concerning biochemical phenomena.

The Birth of Biochemistry.

It must perhaps be always characteristic of a typical borderland science that it should be born with apparent suddenness. There comes, as it were, a critical moment when, one parent science having sufficiently developed its technique, and the other parent science having formulated certain suitable problems, a union of the two becomes fertile. There must be a certain degree of maturity indeed in both parents before the new science can appear. In the case we are thinking of it is fair to say that biology waited for chemistry. The seventeenth and eighteenth centuries were barren in respect of what I have called effective application even of the available chemistry to the available biology, and the same may be said of the first third of the nineteenth. Doubtless there are names belonging to these years which the historian aiming at completeness would register as worthy of mention, and among them he would include the truly great names of John Mayow and Lavoisier. The work of these two laid once for all the solid foundations of knowledge concerning respiration. They might, indeed, be classed as predecessors of Liebig in the irrefragable proofs they brought forward that the methods of the laboratory yield rational results when applied to the animal body. The work of Lavoisier indeed links up directly, though upon limited lines, with that of the late nineteenth century, which finally showed that the body is a seat of manifold combustions and as such obeys the first law of thermodynamics. Lavoisier, however, did not give the impulse which led to the development of modern biochemistry. His thought with regard to living beings was confined to an aspect of affairs which, however important, was limited. Where the chemical properties of the living tissues were concerned his thought was undeveloped and detached. If we define biochemistry as the chemical study of the material basis of life in its dynamic relations, then it was, I think, Liebig who really initiated the study. From Liebig's time (say from 1840 onwards) progress in biochemistry has been real and quite continuous, though, strange to say, the fact is not always recognised even in scientific circles. In this country at least one often meets with the naïve belief that biochemistry as a line of inquiry worthy of respect is brand-new—a product of the present century. This is partly perhaps because it has only recently received its now accepted, but not very attractive, name as a distinct branch of science. There are other and more interesting reasons to which I must refer.

It is unfortunately the case that, until the beginning of the present century, English work did painfully little to advance the subject. There was less interest in it here than in any other country of importance, and this even in the case of professed physiologists and biologists, and quite certainly in the case of pure chemists. In Germany and in Scandinavia much work was being done even 50 years ago, and Slavonic names have always been prominent in the literature. The schools of Hoppe Seyler, Hofmeister, Nencki, and Hammersten were centres of highly productive activity. One of the earliest and most important of the special journals devoted to biochemistry—Hoppe Seyler's *Zeitschrift*—began its existence only two years after Liebeg's death, and its pages from the first illustrate the continuous growth of highly significant knowledge. It is noteworthy, however, that the votaries of the subject were long peculiarly isolated, and had but a small audience. It is not without interest to discover why this was so. Liebig's earliest days saw, of course, the beginning of modern organic chemistry as well as that of biochemistry; indeed, at first, it was interest in the latter which stimulated work at the former. But the very success of early efforts in the chemical laboratory proved to be somewhat fatal to biological interests. The classical case, for instance, of the synthesis of urea by Liebig's intimate friend and associate—Wöhler—while it of course had the profoundest significance for biochemistry, providing indeed its very charter as a rational pursuit, carried with it the germs of something exceedingly inhibitory. The excitement caused by the proof that organic compounds could be made in the laboratory, and the extraordinarily rapid growth of the art of synthesis led the chemist to make a fascinating world of his own composed of molecules made by himself and not by Nature.

Its Early Neglect.

Biochemistry thus was scarcely born when the work and thought of the qualified chemist became divorced from the living plant and animal, and it is only now that his interest in them is re-awakening. Had not this divorce existed, the history of biochemistry during the last 50 years might have been very different. That physiological and biological thought for a long period of years made relatively little use of accumulating biochemical data was doubtless also due in part to preoccupation. Great advances were being made on lines which made no call for chemical data, and there was for all biologists occupation in plenty without the need of overcoming that inertia which is felt when the language, methods, and special conceptions of an accessory science must be acquired. But in the case of the biologist there was, I think, another reason for some lack of sympathy with biochemical effort. There was for a decade or two a pretty general feeling, which some minds still retain, that in biological phenomena chemical facts, though doubtless to be considered, are of superficial and largely technical import. Thus, while the borderland between chemists and biologists was being assiduously cultivated by at least a few devoted workers, for quite a long time very few indeed of their neighbours on either side looked over the border. Traffic across both borders is now setting in, and biochemistry is, I think, gaining sympathy and understanding from many chemists and biologists. I hope before long it may obtain them from all of them.

Sympathy and understanding from the lay public are, in a sense, not essential for scientific progress, but I am sure that most investigators would welcome, and be the better for, a general recognition of the fact that they are working for the public weal. It is certain that the lay public has not yet understood biochemistry, though the magnificent endowment that the subject has just received at Cambridge seems to show that men of affairs are open to conviction of its importance. But that the subject has hitherto had less public understanding than, perhaps, any other branch of applied chemistry is not surprising. The public relies on the lay press, and the press only notices in science what is sensational or of obvious practical import. Biochemistry has seldom, if ever, accomplished the former, and its practical applications have in the main been lost in what are for the laity the mysteries of medicine. But, to say the truth, biochemistry in the matter of public understanding only shares the fate of other biological science. Since it was startled by Darwin and by the pen of Huxley, but later forgot its alarms, the public has been apathetic where biology is concerned. The triumphs of pure chemistry and of modern physics are not unknown to it and represent its conceptions of the progress of science. Yet modern biology has, for those with ears to hear and eyes to see, triumphs scarcely less than those even of physics. I cannot yet claim this for biochemistry; but it can be claimed, say, for recent cytology, for certain aspects of genetics, and for that remarkable pursuit which has become known as experimental zoology. It is a pity that so many highly educated individuals know so little of the remarkably significant facts that have been won in these regions. But biological science has also great economic importance, and that fact the general public should at least be made to know. So great is that importance that I feel all should be grateful to your Principal, who has recently used his influence and his eloquence to urge it upon those who wish well to the Empire.

Liebig and British Apathy to Scientific Research.

To convince the more practically minded of the English people of the importance of scientific knowledge is proverbially difficult. Face to face with this indubitable circumstance, Liebig developed a line of thought which seems to me so interesting that I will risk a little of my brief time to tell you of it. His pioneer studies in scientific agriculture (essentially biochemical in character) had produced much effect in Europe generally, but in England little or none. Here among our agricultural authorities there was nothing but disbelief or indifference. This fretted the mind of Liebig almost beyond his bearing. He set himself in characteristic German fashion to probe deeply for a cause, and he came to the extraordinary but, for him, quite clear conclusion that the apathy of the British farmer was due to the influence of Francis Bacon of Verulam! He traced parallels between what he read in the *Journal of the Royal Agricultural Society* and what he discovered in the works of Bacon, and gained the actual conviction that the spirit of that high priest of the inductive method stood between British understanding and German biochemical science.[1]

It is pathetic to realise that in spite of this laborious research into the causation of British apathy Liebig failed to combat it, and I fear that to this day his name is associated in this country with his extract of meat rather than with his truly great pioneer work in organic chemistry and biochemistry. I certainly do not share Liebig's strange obsession. I do not fear that the spirit of Francis Bacon will stand between me and my audience on the present occasion while I plead the cause of the subject. I have only to convince you that its methods yield significant data. My first intention, however, is to urge that biochemistry, being *par excellence* a borderland science, is for that very reason a fit meeting ground for many minds. I think the biologist should come to it because it endeavours at least to elucidate what must always be a fundamental question in biology, the physico-chemical nature of living material wherever found. I think that even the physicist, and, certainly, the pure chemist should, sometimes at any rate, cross the border—shall I say?—for refreshment and change of outlook. The chemist, at least, if he desire to survey the chemical field as a whole, must include in his survey the events which happen in the living cell. Nowhere else can he learn how complete the *organisation* of chemical events may be. The living cell, of course, is a field in which the influence of the colloid state, of surface activity, and of directive catalysis is displayed to the highest degree, but all of those related characteristics have, as their special and most significant result, the organisation of multifarious reactions into a unified, active, dynamic system. It is, as I have said, this organisation that the chemist meets nowhere else, and unless he bears in mind that the capacity of such an organisation does exist in the scheme of things his thoughts concerning chemical phenomena as a whole must be incomplete. The claims of biochemistry upon medical thought will form the theme of a later section of this address.

The Attributes of Biochemistry.

Before attempting to appraise the present outlook in the subject I would like to say a few words about some general attributes which attach to it as a pursuit. Let me first confess that although I have rightly claimed that for three-quarters of a century the progress has been continuous and real, and that what it offers to the inquiring mind is already of much importance, yet it represents what is still an immature body of knowledge. This is why I began by insisting upon the shortness of its history. Its votaries have till lately been few and their task has been heavy, and, to say the truth, because it is a borderland subject it calls not alone for the interest for which I have already begged, but for the practical help of workers with diverse qualifications. If it calls for recruits it must be able to promise careers, and this I find at the moment it is able to do.

Biochemistry has some special attributes as a calling. As a branch of applied chemistry it trenches more nearly upon philosophical prejudices than other branches. It comes indeed rather nearer to these than other branches of biology, for it seems to treat living matter with no more respect than we accord to dead matter. Can chemistry with the help of physics rightly describe systems which, at least in their higher developments, seem to become inevitably associated with the mysterious phenomena of consciousness? This reiterated question must still be asked. Not a few still think it presumptuous to pretend to such descriptions. They hold that they can at best be only equivalent to description of the play of *Hamlet* without the prince. I must, of course, not stop to put the case for vitalism or mechanism, and I have only strayed into this thorny but much-trodden path because I think this particular attribute of biochemistry does appreciably affect the atmosphere in which its work is done. The thoughtful investigator is not always content to feel that utility alone justifies his efforts. He wants to conceive of some final if ideal goal. A young investigator may at moments have his doubts, but never when his research is making progress. Then, whether his tendencies are towards monism or dualism, or towards suspension of judgment on such matters, he is happy because he sees his work is real. Anyone who applies chemical and physical methods to the study of an organised system such as the living cell, and, perforce, deals with it piecemeal and from isolated aspects, must, of course, remember all the time that his data lose meaning if he does not in his thoughts relate the parts to the whole. The idea of "purpose" then creeps in, but it need not become a preoccupation. Abstract science has no such preoccupations, but it must be admitted that when a self-regulated system comes objectively before us it is difficult not to think that purpose controls its organisation. The purpose may be there, but, if so, it is surely not confined to biological systems. If a human mind familiar with the present scheme of things, and conceiving of no other, could have watched the evolution of atoms it would have seen purpose in the progressive reconstellations of electrons. Indeed, atomistic physics in its present endeavour to describe organised systems instead of dealing with abstract atoms comes nearer than before to the biological method of thought.[2] If a complete dynamic description of the living cell should ever become possible, the chemical facts, so far from being of superficial importance, must in any case form a highly essential part of that description. The exceptional nature of the materials with which it has finally to deal, and the fact that these materials are of real interest only while they still exhibit all that instability which represents life, introduce technical difficulties which constitute a second characteristic of biochemistry. Its earliest endeavours, of course, were mainly directed to isolating individual substances from the plant and animal with the intention of determining their constitution. To this endeavour there was early added (in the case of animal biochemistry) a study of what may be called the balance-sheet of the body, a comparison of income and outgo, and this permitted some, though very limited, conclusions as to the nature of the events in the body itself.

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[1] Liebig: Ueber Francis Bacon von Verulam und die Methode der Naturforschung, München, 1863.

THE METHODS OF BIOCHEMISTRY.

It was indeed long the opinion of many that chemical studies could not attain to much more than this. How, it was asked, could information be obtained concerning events within living systems by methods which, at the moment of their application, must from their very nature upset the whole of the significant and essential relations? Yet it is a fact that biochemistry has so progressed that our studies of living tissues have become dynamic instead of static. By diverse methods, by taking advantage of one possibility here and another there; by realising the fact that individual reactions as such do not necessarily close when structure is destroyed; by learning how to arrest this or that process of change at its critical moment; by studying the activities of isolated organs while their life is artificially maintained; by noting the effect of the absence of this or that factor when it has been removed experimentally, or by disease or by inherited deficiencies; by noting what particular precursor can yield a given end-product; by using micro-methods of analysis so that they may be applied to the intact body without damage or hurt; by these and by a score of other (may I say) ingenuities in method, we are learning not only what chemical actions occur in living tissues, but the lines upon which reactions run, the stages through which they pass, the equilibria to which they attain. There is every reason to believe that without great difficulty we shall come to know the details of every one of the multifarious reactions which proceed, usually with great velocity, within a living cell. Far more remote is a grasp of their organisation which is the abiding characteristic of the cell. Personally, however, I do not believe that an ultimate understanding will call for knowledge of a category different from that which we are accumulating.

Apart from the instability of the systems which he is endeavouring to describe, the biochemist meets with another factor characteristic of his material: the importance, namely, of the infinitesimal. In living tissues a prepotent influence is exerted by substances present in concentrations which are minute. The necessity of adjustment to this circumstance, though by no means unknown to other branches of science, especially dominates the biochemical field and gives another special stamp to its study both on its theoretical and technical sides. Finally, biochemistry differs from other branches of applied chemistry in that it must at least occasionally employ living animals in its investigations. I might mention other characteristics, but I have said sufficient to remind you that the pursuit of biochemistry calls for a special equipment.

THE PRESENT OUTLOOK.

I will now pass on to some appraisement, necessarily brief and very imperfect, of its accomplishment and present outlook. I have already claimed that its data had reached real significance long before it attained in recent years to the status of a separate scientific discipline; but there is no doubt that its progress has accelerated of late to a degree which is striking. This is due in large part to efforts in its own proper sphere, but also, as would be inevitable in the case of any borderland science, to contemporary progress in the related sciences. Indeed, the factor of acceleration which would probably first occur to the mind of most is the coincident advance of physical chemistry. Biology, for instance, waited long for the data which colloidal chemistry is now supplying, and for such increased precision concerning factors which condition biochemical activity as may be illustrated by the arrival of the conception of hydrogen-ion concentration to replace the vaguer ideas of acidity, neutrality, and alkalinity. Such assistance has come, and is coming in increasing measure, from exponents of the more exact sciences, but the historian will note that these particular advances in physical chemistry of which I am speaking found their stimulus in biological needs and owed their initial success to biological workers. Biochemistry has, of course, also reacted to the progress of organic chemistry. Indeed, if one may make the point here—I have made it, too persistently perhaps, in other places—there is a tendency just now to ascribe to physico-chemical methods of study a too exclusive importance where the living cell is concerned. That the properties of colloids are of dominant importance goes without saying, but the multifarious organised dynamic activities in which the influence of molecular structure plays an unmistakable part are just as characteristic of life as the general behaviour of the colloidal apparatus in which these activities occur. It is true that the modern investigation of the behaviour of molecular structure at surfaces is breaking down somewhat the distinction implied in these remarks, but in any case the aid of the organic chemist in biochemical studies is needed as urgently as ever. It will be found, however, that much of the recently accelerated progress in biochemistry has been due to a development of its own technique. It was fortunate for the science that when some 15 years ago the need for new and especially for quantitative methods became urgent, a number of patient workers in America, in this country, and elsewhere set themselves to meet the demand with conspicuous success. This development continues, and of late has displayed itself especially in the multiplication of micro-methods of quantitative analysis, concerning the importance of which I will presently speak.

In illustration of the real significance of what has already been gained by biochemical study, I must be content to select a very small part of the available material. I will briefly discuss, almost in the form of a schedule rather than in that of a proper exposition, and perhaps without any logical sequence, certain aspects of the existing knowledge, each aspect being chosen to recall so far as possible a distinct line of endeavour with its results. I am inclined particularly to choose facts which emphasise the reality of the influence of molecular structure in the dynamic events of living matter, because I myself think that a realisation of this should form the very basis for biochemical thought. It seems to me that the influence of Ehrlich's "side-chain theory" has paradoxically made this reality unreal to some. That theory, though it served its turn, was itself an artificial and unreal application of structure considerations. It ultimately failed to satisfy, and many in rejecting it began to think in terms of adsorption, permeability changes, changes of dispersion and the like, and in these alone. This involves a standpoint quite as limited as that which the side-chain theory evoked. If I discuss facts which are familiar the circumstance will at least facilitate the brevity of treatment which is essential. I cannot deal with history.

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[2] Compare Johan Hjort, The Unity of Science.

Certain Aspects of Our Knowledge.

Up to the very end of the last century our knowledge of the chemistry of those primary constituents of living tissues, the proteins, was slight and unsatisfactory. Then came, somewhat suddenly, very remarkable and rapid progress in that knowledge. That the effect of this upon the biochemical outlook would be extensive everybody realised at the time; but its effect, difficult to appraise in a few words, has been even greater, I think, than was expected. The protein molecule, though exceedingly complex in the details of its structure, proved relatively simple in type. We know the units—the amino-acids—of which its complex pattern is built up and the constitution of each of them—some 20 in all. The significant circumstance, however, from the standpoint of biochemistry proper is that the digestive processes liberate the units of structure from the protein complex, so that it is with these, and with each of them individually, that the body deals. Since the molecular structure of each is known, what may be called the true organic chemistry of protein metabolism became a possible study, and it has progressed remarkably. When protein is consumed, 20 distinct substances enter the body each with its own special attributes. We possess suggestive knowledge concerning the fate in metabolism of each one of them. We know already, at least in outline, the stages of change through which each passes while suffering decompositions or syntheses in the body. Only those who compare with the present outlook the existing views concerning protein metabolism before this chemical knowledge came can realise how great has been the influence of that knowledge. Our recently won grasp of protein chemistry has furthermore made the biologist understand that underlying the morphological differentiation of species there is chemical differentiation, of which the primary seat is in the proteins of the blood and tissues. "The material determines the form."

Choosing another illustration of successful progress in the chemical study of tissue constituents, I may recall how detailed is the knowledge we possess of those specific substances, fundamental in biochemical importance, which characterise the nuclei of cells. The pure chemistry of the complex nucleic acids has become remarkably complete, and highly detailed is our knowledge of the successive stages in their metabolism.

THE INFLUENCE OF MOLECULAR STRUCTURE ON BIOCHEMICAL PHENOMENA.

In illustration of how most extensive information has been gained concerning the equipment of the living tissues as laboratories I might call attention to the researches which have dealt with the chemical fate of foreign substances when introduced into the body. The pharmacologist in studying organic drugs determines the influence of molecular structure as it affects the tissues. In doing so, however, he cannot refrain from ascertaining how, conversely, the tissues deal with the molecular structure of the drug. On these lines, carried outside the limits of pharmacology, a body of knowledge has grown up which is greatly significant to biochemistry. But it is technical and I must not dwell upon it. Suffice it to say that the body proves able to carry out efficiently, though under its own exceptional conditions, almost every process that is familiar to the organic chemist; and as much in the body as in the laboratory the precise fate of a substance is determined by its molecular structure.

I am much concerned to show how little any quality that is "biological" or "vital" in living systems submerges the influence of molecular structure—that is, the influence of frankly chemical properties—in biochemical phenomena. In further illustration of this I may turn to what is now the familiar subject of the internal secretions. The discovery of these, due to the pioneer labours of English physiologists, gave a new charter to biochemistry by adding to the biological reality of its data. Everyone who thinks at all of such matters will realise that in so highly differentiated a system as the animal body agencies must exist to coördinate the activities of each organ with those of all others, else the system could not work harmoniously. Until about 25 years ago such coördinating functions were ascribed solely to the nervous system. Now we know that underlying the influence of the nerves there is chemical coördination. Many, and probably all, organs and tissues of the body, in addition to exercising their local functions, pour into the blood-stream secretions which, carried round by the circulation, help to secure harmony and balance in the body as a whole. The normal working of each tissue would seem to depend upon such contributions from almost every other tissue. Profoundly significant, and a remarkable justification for the boldest application of chemical methods and chemical thought to the functions of the body, is the almost inevitable conclusion from our present knowledge that all their secretions act because each contains a definite specific substance which induces or controls some physiological event, or some essential aspect of a physiological event, as the result of its inherent chemical properties.

If the specific chemical properties of a substance, and these in the case of an organic compound represent the results of a particular molecular structure, determine the occurrence of change in a physiological system, it must be because within that system the properties of molecular structure are also somewhere displayed. It may be the structure of molecules in solution; it may be molecular structure displayed at surfaces. In any case, the chemical lever calls for a chemical fulcrum. In one case at least we have a perfect knowledge of the molecular structure—and it is a relatively simple structure—of a substance which appears in the body with profound effect. The case of adrenalin, which has occupied the attention of hundreds of observers, has become so familiar, and its physiological and pathological relations have so held the field, that its significance to my particular theme may be obscured. Here we have a substance produced, mainly, at least, by a pair of small organs and circulating at any moment in extremely small amount, which controls some of the most fundamental adjustments of the body. I clearly must not stop to dwell upon its functions. For the very few who are not familiar with them I may most briefly state that its availability in average amount secures among other adjustments the proper regulation of blood pressure and all that depends upon this. If its supply fails the animal is incapacitated, while an increase prepares it for strenuous endeavour by raising all the functions required by such endeavour to the right pitch of efficiency. From the standpoint which I am asking you to take, the essential thing is that these striking effects are due to the qualities of a relatively simple chemical substance of which the structure is known and which can be made artificially. The adrenalin molecule is one of a group of molecules which exercise a prepotent influence in the scheme of things.

The Thyroid Secretion and Insulin.

Exercising quite different functions, but of equal significance, are other definite chemical substances each elaborated by a special organ of the body. I will refer to two only. The iodine compound produced by the thyroid gland as the result of its innate characters controls in some remarkable way the rate of chemical change in the tissues. It has been isolated, though its constitution is not yet accurately known. Insulin produced in the pancreas is again assuredly a perfectly definite chemical agent, though awaiting isolation. The necessity of a supply of this last substance for the proper utilisation of sugar by the tissues is a circumstance with which everybody here will have recently become familiar. You will observe that what is significant for my particular theme is not the details of the physiological events, but the facts of the potency displayed by definite chemical substances in the normal control of such events. The effects of chemical structure are not submerged in the "biological" or "vital." Moreover, the importance of molecular structure is beginning to be seen in the catalytic agencies which are contained in the essential make-up of each individual cell. We know at least that one universal constituent of living cells, because of its molecular properties, determines the occurrence of change. Its molecule contains a Thiol group and the substance, itself being autoxidisable, determines, though present in very low concentration, the occurrence of other important oxidations. Its mere presence secures that a constituent part of the cell system shall display dynamic properties. In a real sense, I think, this substance "glutathione" may be looked upon as a simple model of an enzyme. Enzymes themselves are, of course, the chief catalytic agents in the cell, and concerning their molecular structure we as yet know nothing. Our attention so far has been mainly directed to their colloidal properties, but however great the importance of these, we shall, I feel sure, ultimately discover that some element of structure, some active group, is the essential determinant of each enzyme's activity. When an enzyme has been isolated and its precise nature determined, biochemistry will have taken a great step forward, because although a great deal of important information has accumulated as the result of studying the kinetics of reaction as controlled by these agents, the enzyme had perforce in every case been impure when introduced. The actual mechanism of enzyme action is yet unknown, and will be until we can investigate the nature of the catalyst itself. The endeavour to isolate enzymes is proceeding very vigorously just now, and is not without promise of an early success.

The Physical Basis of Life.

The recognition of the existence of active specific catalysts within the cell and a belief in their manifold activity, together with some other advances, has modified in an important way views which were common in Huxley's time concerning the nature of what he called the physical basis of life—the material make-up of a living unit. We are ceasing to believe that the living unit is some sort of a giant molecule. The term protoplasm itself is, I think, recognised by most as representing an abstraction. The living unit is the cell, or if some simpler system, at any rate one of which the essence is that it is heterogeneous. There is no such thing as living matter in a specific sense. The criteria of life are displayed by systems in which catalysed reactions occur in a colloidal milieu. The special attribute of such systems from a chemical standpoint is that these reactions are organised, not that the molecules concerned are fundamentally different in kind from those the chemist meets elsewhere. If this kind of concept concerning the physical basis of life proves ultimately right, it is certainly more stimulating to chemical thought, and gives more justification for chemical methods of attack than the for ever elusive protoplasmic molecule. Certainly, intact living tissues would seem difficult enough to study by chemical means, but that solid information can be obtained about the events which occur in them, even without present technique, is well illustrated by the results of the studies of active muscle. It is, for instance, remarkable how satisfying is the present picture we possess, even though it be but a sketch, of the chemical events which are associated with the physiological events in muscular tissue.

As a last illustration of the significance of biochemical data I may adduce the growing knowledge concerning equilibria in the circulating blood. This constitutes already a chapter of exact science. It is based, indeed, upon the development of admirable methods. It covers the equilibrium changes between the blood and the alveolar air, between the blood and the tissues, and is concerned with the excretory functions of the kidney. It illustrates most remarkably the stabilising effect of perfect buffering in a fluid which constantly receives additions of acid or alkali without appreciable changes in the concentration of hydrogen ions. The properties of the hæmoglobin molecule as an oxygen carrier are so exceptional and remarkable, that I think no chemist's education can be complete unless he be fully familiar with them. I may point out further that the recent development of accurate micro-methods of analysis have enabled us to determine the amount of nearly all known constituents of the blood, organic and inorganic, on an amount of material which in each case can be got from a pricked finger, or at any rate upon two or three cubic centimetres. The effect of this or that factor upon the equilibrium between the blood and tissues can thus be determined in detail, and without inconvenience even to human subjects. A noteworthy body of knowledge is growing up on these lines which will influence both physiology and medicine.

My survey of the biochemical field has been so limited as to be almost trivial; but it is sure that nothing but the strictly limited could be attempted in a part of a single address. I have, to my regret, said nothing of the all-important phenomena displayed by the green plant, the very fundamentals of biochemistry. I have, again, not referred to the data gained from studies of the metabolism of micro-organisms. Yet in the case of bacterial chemistry much, if somewhat unorganised, knowledge has been gained, and, as you know, fermentation chemistry has of late made rapid strides. The lessons to be learned from the chemical behaviour of micro-organisms are indeed of profound importance to biochemistry as a whole. The science, like many others, has hitherto been studied too much in water-tight compartments. In one centre "biochemistry" means fermentation chemistry alone, in another medical chemistry alone. If now I am to turn to consider the future of the science I will start by saying that its future will be well served if it be taught, at least to a special group of students, as a whole. Metabolism—that is, the chemical dynamic of living things—to be understood must be thought of as a whole from its manifestations in a bacillus to its manifestations in man. So surveyed and thought about the subject becomes, as I have already claimed, a meeting place for many minds.

The Future of Biochemistry.

In a brief attempt to picture its future possibilities I cannot emulate the prophetic method of Mr. Wells, or the stimulating thought of my colleague Mr. Haldane. It would be, of course, easy enough to speculate, for example, upon a world in which biochemical synthesis replaced agriculture. Indeed, as soon as the constitution of three or four vitamins becomes known there is no reason, so far as we know, why we should not begin to set about the synthesis of a perfect dietary. Kindred speculations might easily occupy us, but something more sober may be more useful. Since, however, I have happened thus to touch upon the question of dietaries let me just state that, in my opinion, biochemical science will in the future yet have much more to say concerning the details of ideal nutrition. I think surprisingly more! Such details may not at present interest the laity nor even the practising physician. The less thoughtful are content to remember that humanity has rubbed along very well in respect of its nutrition by the help of its instincts and experience alone. It was indeed a feeling similar to this, and not, as he thought, the spirit of Francis Bacon, which really stood between Liebig's earlier teaching and the British agriculturist. The farmer has learnt a good deal since, but the above feeling is still in his mind, as it is in the general mind when, unwillingly, it reads of calories, proteins, and vitamins. The future world will, I think, take a different view. If industrialism increases while the available fertile areas of the globe steadily decrease, and that is the most likely outlook, mankind will best save itself by knowing all that can be known about the economies and the betterments which biochemical science alone can provide. Students of nutrition then work for the future. Nevertheless, I would not have you believe that what has already been accomplished in this domain is of no practical value to the present. Had I leisure, and were this the occasion, I could easily convince you to the contrary. But with regard to the immediate future of biochemistry let me only just say that in all the lines of inquiry just chosen for illustration, and in a score of others, progress is accelerating, for the happy reason that more qualified workers than ever before are now engaged upon them. The science has not yet won universal recognition from those sciences for which it is a borderland, but, as I have already said, traffic across the borders is setting in, I think, to the advantage of all For the main theme of this address is that biochemistry, because of certain attributes it possesses which I have already imperfectly indicated, is, perhaps, more than other borderland sciences, a fitting meeting place for many minds and for many university faculties; though because of other attributes it calls for special discipline and special equipment.

THE CLAIMS OF BIOCHEMISTRY ON MEDICAL THOUGHT.

I would now like, in a few words, to put a final consideration before you. It concerns the status of laboratory science, including biochemistry, as accessory to the progress of medicine. I do not wish to discuss the relations between the medically qualified laboratory worker and the clinician. These, after a period of adjustment, seem now to be most happy. The leaders of the English clinical world indeed officially recognise and superabundantly reward those who from the laboratory have made even the smallest contributions towards the progress of medicine, as I in my own person can testify. It is of the public I am thinking, but of the cultured public as well as the general. The public understands the aims and work of the practitioner and at bottom is deeply grateful for his services; but it has never really placed the laboratory worker. It is apt, perhaps subconsciously, to assume that medicine advances by experience alone. Now, it is no reflection at all upon the great art of medicine, nor indeed upon the clinical investigator, to claim that the great and sudden advances that have occurred in the history of modern medicine have been based upon knowledge first gained in the laboratory. Some would perhaps not agree with this statement, but I think most—and certainly the candid historian—will do so. Clinical observation laid, of course, the solid foundations of knowledge, and laboratory teaching cannot be accepted by the doctor until it has been proven and consolidated at the bedside; but rapid progress, revolutionary steps in advance, must nearly always begin in the laboratory. The reason is obvious. The clinician must in the main rely upon observation rather than experiment. This the public will be the first to recognise. Now the accumulation of knowledge by observation alone (the older method) must always be infinitely slower than the gain of new knowledge by experiment. Certain words of a great English clinical observer struck me when I met them long ago as significant. I have quoted them elsewhere,[3] but I should like to quote them again. The great English clinician, William Jenner, had been striving to convince his colleagues that typhus and typhoid fever are distinct in their ætiology. In this effort, though so entirely right, he was at first unsuccessful. "I considered, therefore," he writes in the preface to his book on fevers published in 1850, "that it was necessary to begin again *de novo* and consult only the voice of Nature—convinced that although the most intellectual might fail at first to comprehend her often ambiguous language, yet that her most humble votaries might, by patience and daily watching, by keeping honest record of every sound she uttered—by joining letter to letter, adding word to word, and line to line—at last spell out her meaning . . ."

Here in fine but almost pathetic terms we learn what the slow task of the observer must be. Jenner felt the ambiguity of Nature's chance remarks, but saw apparently no remedy save in the laborious recording of her spontaneous utterings and a painful effort at interpretation. Nature, however, can be taken into the witness-box and sharply questioned. Moreover, the questions can be so put as to admit of no ambiguity in the answer. That is the method of experiment!

Now the biological laboratory worker is usually at least as disinterested as his fellow-men. In general, perhaps, he craves less than most for public rewards. But he deserves public recognition as an honest citizen and should not remain unclassified in the body-politic. He has become as much an essential unit of the social organisation as any other worker. May I add as my final word that if he happens to be a biochemist, who in common with the physiologist and pathologist must at times employ living animals in his experiments, he may yet be as kind and honest in heart and soul as the best of his fellow-men, carrying out such experiments with the fullest sense of his responsibility to humanity.

A Lecture

ON THE

SENSIBILITY OF THE SKIN

IN RELATION TO NEUROLOGICAL THEORY.

Delivered at the Institute of Pathology and Research,
St. Mary's Hospital, London, on June 5th, 1924,

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IN the physiology of the nervous system it is a very obvious proposition that the finer study of sensory function can be carried out only in relation to the human subject. Moreover, if such work is to have more than a very narrowly limited value, it must be concerned with the effects of lesions experimentally produced and observed in the conditions of the physiological laboratory. It was these facts which made the work of Head and Rivers in this field so immediately and manifestly important. This now classical contribution to neurology made available a new method of research, recorded a large body of observations which were the first-fruits of the new method, and enunciated a hypothesis bearing on the fundamental nature of peripheral sensation. The opinion may be ventured that in the ultimate estimation of this work physiology will come to apportion value to its various constituents in the order in which I have named them.

It is probable that no new method of physiological research has been less exploited by other writers than has that of Head and Rivers, and that no equally revolutionary hypothesis has been less criticised or confirmed by repetition of the original experiment. This may well be due to the justly authoritative status of its makers, as well as perhaps to the rather dry and recondite nature of the subject, and the exacting tedium of the research. It is nearly 20 years since their paper was published, and I am aware of only two attempts thoroughly to cover the same ground. The first of these was undertaken by Morriston Davies and myself, and its first results were published 15 years ago. It embodied the results of a somewhat prolonged study during which observations were made on seven different areas of sensory disturbance experimentally produced by nerve section and suture in one or other of the two subjects.

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[3] "Science and the Nation." Camb. Univ. Press.

Our results, when compared with those of our predecessors, showed in the first place a certain general agreement as to the facts of observation; secondly, showed a divergence in regard to certain observations which we could not but regard as critical; and thirdly, they appeared when the utmost allowance for interpretation had been made, to be incompatible with the hypothesis of peripheral sensation at which Head and Rivers had arrived. I do not propose to trouble you with a critical examination of these divergences. Since, as it seems to me, they are not wholly to be explained as differences of interpretation, they can best be determined by further experimental evidence. The consideration of what additional evidence is now available would, however, be a digression from the limited subject I propose to deal with to-day. My intention is rather to make some comments on the hypothesis of Head and Rivers in its general neurological aspects, and then to indicate certain other considerations which seem also to be suggested by the facts.

THE HYPOTHESIS OF HEAD AND RIVERS.

It seems scarcely necessary to describe in detail so well-known a doctrine as that of Head and Rivers, but to avoid ambiguity I should perhaps remind you of its general features. According to these observers each cutaneous sensory nerve contains two systems of fibres which differ in function, in distribution, and in the rate at which they regenerate after section. One of these systems is concerned with what may be regarded as the less highly evolved forms of sensation (pain and sensibility to thermal extremes); it yields sensations of a peculiar intensity—usually disagreeable, tending strongly to produce a motor response, and having peculiarities of localisation; it regenerates readily and earlier than does the other system, and in distribution it is freely overlapped. The other system is concerned with what may be regarded as the more highly evolved forms of sensation (light touch and sensibility to intermediate temperatures); it regenerates less easily and more slowly than does the first system. When present and functioning in a given area of skin it inhibits the peculiarities of quality and localisation which sensibility would have if it were dependent on the first system alone. To these two hypothetical systems of nerve fibres Head and Rivers gave the exceedingly apt and attractive names of protopathic and epicritic respectively.

The main fact on which this hypothesis is based is that sensibility in an area of skin of which the sensory nerve is regenerating possesses certain peculiarities of which an intensification of quality and a certain displacement of localisation are the most characteristic. This fact is wholly incontestable, though it is not equally certain how constant an accompaniment of regeneration these peculiarities of sensibility are. They were certainly present in all the seven experiments in nerve section made by Davies and myself. Certain further and less definitely established observations are necessary for the support of the hypothesis.

When a cutaneous area is deprived of its nerve-supply, since the area of epicritic loss is greater than the area of protopathic loss, the central region which is deprived of both forms of sensibility must be surrounded by a margin which retains protopathic sensibility only. According to the hypothesis this intermediate zone, as it may conveniently be called, should possess a form of sensibility substantially identical with that peculiar sensibility characteristic of regeneration. This identity Davies and I were quite unable to confirm, and we found reason to regard the intermediate zone as a mere region of defective sensibility of all forms gradually increasing in depth from its margin inwards.

A further group of observations essential to the validity of the hypothesis is, first, that during regeneration the return of epicritic sensibility is greatly delayed, and secondly, that with this return of epicritic sensibility (e.g., sensibility to light touch) the sensibility of the area in which regeneration is occurring loses those characters of intensification of quality and displacement of localisation it formerly possessed. In neither of these essential requirements did our observations confirm those of Head and Rivers.

As I have already said, I shall do nothing here by way of critical discussion or detailed examination to enforce the bearing of these discrepancies of observation. They are mentioned only as they necessarily gave rise to the suggestion that the protopathic-epicritic constitution of the cutaneous nerves could scarcely be regarded as definitely established, and that possibly further consideration might afford at least an alternative method of regarding the facts.

When we take a general view of this hypothesis, it is difficult to guard ourselves from taking its compactness, its symmetry, and its self-consistency as in some way contributing to the proof of its validity. To yield to such an inclination is perhaps the most subtle and tempting fallacy to which neurological speculation is exposed. The history of science has shown time and again that these marks of a biological and especially of a neurological conception are often not merely irrelevant as evidence, but actually a ground of suspicion that the conception in question contains too large an amount of the abstract and the unreal. Indeed, it may perhaps fairly be said that the hypothesis of Head and Rivers has enough in it of essentially abstract elements to make a real difficulty to its being accepted as representing a neurological reality.

I do not propose to trouble you with any attempt to discuss this very difficult department of the theory of method, and I can only indicate one or two of the aspects of the hypothesis which seem to me dangerously abstract.

We are to regard the protopathic system as more or less definitely representing an evolutionary phase in which it constituted the sole sensory apparatus of the skin. The hypothetical primitive animal of this stage is thus supposed not merely to be without the power of appreciating intermediate temperatures and of localising contacts, but without the power of appreciating light touch. It is difficult not to regard such a conception as a highly abstract one, and very much out of relation with biological reality. There is, as far as I am aware, no biological evidence for regarding sensibility to light touch as less primitive than any other form of sensibility.

Again, one may mention the effect of the epicritic system in totally inhibiting the characteristic qualities of protopathic sensibility. It is suggested that both in the evolutionary process, and during regeneration in the individual, the mere appearance of epicritic sensibility neatly and absolutely effaces the very remarkable qualities of protopathic sensibility, which, however, remain merely concealed and ready immediately to reappear if the epicritic system is withdrawn. Quite apart from the question whether this is or is not an established fact of observation, the conception would seem to need the closest examination before it could be accepted as a definite neurological principle. Difficulties of this class may seem to be unimportant unless we constantly remember the vital need in all matters of neurological theory for realistic rather than abstract thought. I shall make no attempt to deal further with this aspect of the subject, however, beyond pointing out one assumption that seems to me to be made in the work of Head and Rivers, and to be of serious importance. It is taken for granted that all the consequences of division and suture of a nerve are what we may call physiological or normal, and that any peculiarities of sensibility in the affected area of skin are merely due to defects of nerve supply, and represent stages in the orderly return of function. These observers do not seem to have contemplated the possibility that section of a nerve may in itself be a serious pathological accident, the possible effect of which on the character of sensation might be worth considering. Even the most general consideration would seem to suggest that we are exposing ourselves to the risk of error if we assume that the local consequences of division and suture can be ignored, and that our sole task is to observe and record the regular and punctual return of function.

The Effects of a Nerve Section.

There are abundant and familiar facts pointing in a precisely opposite direction. In the first place, the restoration of function, even after the most careful suture of nerves, is notoriously uncertain and apt to be greatly delayed and incomplete. Secondly, the site of the division and suture of a nerve is the seat of pronounced activities which are readily observable histologically. These activities are partaken in by the nerve and by the surrounding tissues. On the side of the nerve there is at the proximal end an active outgrowth and ramification of the axis-cylinders which pour out from the cut surface in a veritable spray, and invade not merely the peripheral end of the nerve but the surrounding tissues as well. On the side of the tissues surrounding the divided nerve there is an equal activity, the tendency of which is to form a dense fibrous tissue that restrains the escaping axis-cylinders and protects the surrounding parts from unlimited invasion by them. These processes are seen in their highest development in the well-known bulbous end or "amputation neuroma" that always follows the simple transverse division of a nerve. Here are very well seen the extreme activity of the outgrowing axis-cylinders, and the very great density of the fibrous capsule with which the surrounding tissues defend themselves. It is so general a rule in pathology that disturbances of function precede any obvious alteration of structure in the affected part that it would be at least remarkable if these very pronounced structural changes had no functional counterpart at all.

That this activity is not, in fact, without effect on the function of the nerve is shown by the well-known sensory phenomena that follow amputations even in the total absence of infection of any kind. That the outgrowing axis-cylinders are subject to excitation in the amputation neuroma is made evident by the persistence of "phantom" limbs after amputations. The degree of this excitation is very variable. Sometimes it is very severe and the phantom limb is the seat of very painful and distressing sensations. More usually equilibrium in the neuroma is gradually established, and the persistent sense of the limb slowly fades. From facts such as these certain conclusions of general application seem to follow. First, it is clear that the division of a nerve, followed by however exact and aseptic a suture, must always be an important event in the neurological sense and one that gives rise to indefinitely great possibilities in the way of disturbed function. Secondly, the significance of such an event lies in the coming into contact of bare axis-cylinders with adjacent non-neural tissues, and the energetic reactions set up in consequence.

The occurrence of these reactions and the fact that they are capable of producing functional disturbances of the affected area, suggested to Davies and me the possibility that in this direction might be found some light on the marked peculiarities of the sensibility of recovering areas. Of these peculiarities, the most striking, and undoubtedly the most important, is the intensification of sensations. This character is in no way a hyperæsthesia, since the sensation may need an abnormally strong stimulus to elicit it, but is concerned entirely with quality. This intensified quality—which is most easily observed with pain and cold sensations—gives to the sensation a kind of explosive vividness and brilliance which constitute a wholly new experience. There can be no question that the intensification of sensation is the essentially significant fact in the phenomena accompanying regeneration.

The conception that the direct contact of neural and non-neural or, as we may perhaps call them, somatic tissues is always a significant event neurologically and capable of producing widespread functional disturbance, naturally led us to inquire whether in the nervous system in general such an occurrence is provided against as thoroughly as the hypothesis seemed to require.

The Insulation of the Nervous System.

Considered in the most general way, the nervous system is a collection of tissue the essential function of which is the capacity to act upon and be acted upon by the other tissues of the body. This character in one aspect is the power to stimulate and be stimulated by the somatic tissues, and in another aspect is an incapacity to tolerate direct contact with them—an inveterate and probably physico-chemical incompatibility with them. It is essential, therefore, that the qualitative difference between neural and non-neural tissues should be kept sharp, and, on the other hand, that contact between the two kinds should be absolutely restricted to points where interaction is necessary.

In actual anatomical fact such insulation is unmistakably traceable. In the case of the central nervous system the dura mater is the principal insulating medium, in the case of the peripheral nerves the neurilemma sheath. Every element of the nervous system is kept from contact with somatic tissues either by the dura or by a neurilemma sheath, and in this insulation there is no chink except those very restricted ones which allow of contact for functional purposes.

The function of the dura has generally been regarded as chiefly mechanical and supporting. Familiarity with its physiology and pathology shows its insulating function to be far more important. If a segment of cerebral dura is excised and the subcutaneous tissues of the scalp left in contact with the brain, a new segment of dura immediately begins to form in the gap and in a few weeks is indistinguishable from the old—that is to say, it has the same dense impervious substance and the same endothelial surface within and without. It is apparently formed by a reaction in the non-neural tissues from contact with the brain by a process perhaps similar to that by which contact with naked axis-cylinders leads to the formation of the amputation neuroma.

The cerebro-spinal fluid also posseses the neural characteristic of exciting dura formation. If the spinal dura is incised and the fluid allowed to escape into the tissues, it excites around it the formation of a sac continuous with, and in character indistinguishable from, the normal dura. This fact, that wherever cerebro-spinal fluid is a dura will form round it, explains the uniform failure of all attempts to drain the fluid of hydrocephalus into extra-neural regions. The size of the central nervous mass has necessarily involved its free penetration by blood-vessels non-neural in their nature. The more or less complete absence of neurilemma in the brain and cord has rendered necessary the insulation of these vessels to compensate for the absence of insulation of the individual nervous elements. This is effected by the exact enclosure of all vessels in the so-called perivascular lymphatics which from this point of view are seen to have a very definite and important function. When we see how precisely insulated is every somatic element that penetrates the brain or cord, it becomes clear that no general framework of connective tissue would be possible there, and we may infer that the neuroglial stroma of the central nervous system owes its existence perhaps less to its being in any special degree fitted for the mechanical support of nervous elements than to its being of neural origin and so able to exist in contact with active nervous tissues without reaction.

Outside the dura the insulating function is taken on by the neurilemma which is everywhere continued unbroken to the functional termination of the axis-cylinder.

PATHOLOGICAL CONSIDERATIONS.

It is possible to trace in pathological phenomena further evidence of the reality of what we may call neuro-somatic incompatibility and the importance of neural insulation. One very striking fact is the inaccessibility of the actual parenchyma of the central nervous system to certain drugs—for example, anti-syphilitic remedies. This fact, wholly unexpected as it was to ordinary physiological notions, is perhaps especially interesting in its bearing on principle, since it led to the invention of those extremely plausible abstractions para-syphilitic diseases. It seems scarcely possible to doubt that this ultimate impenetrability of the brain and spinal cord is an expression of the degree to which insulation is carried. Again, certain features in the behaviour of some intracranial tumours can only be explained when we grasp the depth of the incompatibility of neural and non-neural tissues. The dural endothelioma as regards the dura, the skull, and the scalp is capable of behaving as a typical malignant neoplasm with infiltrating spread and ulceration. As regards the brain, however, it is always benign; it may compress it and even become deeply embedded in it, but it never in any circumstances infiltrates the cerebral substance. The glioma, on the other hand, may infiltrate the brain substance, but though it may thin the skull by pressure, it never invades it. These growths thus show their essentially non-neural and neural origins respectively, and always remain true to type.[1]

Of pathological facts bearing on the importance of neural insulation those illustrating its breakdown are perhaps the most interesting. The ordinary neuro-fibroma bears a considerable resemblance in structure to the amputation neuroma, being made up of convoluted nerve-fibres embedded in a dense fibrous tissue. It seems reasonable to suppose that it is essentially of the same nature and owes its origin to an escape of axis-cylinders from their normal insulation as the result of the weakening of this by injury or disease. In Recklinghausen's disease the suggestion is strong that we have to deal with a widespread primary weakness of the insulating mechanism leading to multiple escapes of axis-cylinders, each "leak" producing the inevitable reaction in the form of a neuro-fibroma. Such neuromata are, of course, very much the most common in the peripheral nerves, but they do occur within the spinal canal and within the cranium. It is interesting to notice that those neuromata that occur inside the dura are not usually made up of the dense hard fibrous tissue met with elsewhere, but are usually much softer, more cellular, and apt to undergo degenerations and cyst formation. This is just the variation one might expect, since within the dura the reaction to an "escape" must be less vigorous and the available non-neural tissue capable of reacting to it very strictly limited in amount.

INSULATION OF SENSORY NERVE-ENDINGS.

In tracing the various mechanisms by which the insulation of neural tissues from the non-neural is maintained, we have not yet considered the state of affairs at the terminations of the peripheral nerves. Three conditions are found each of which has its special significance. The end-organ of motor nerve-fibres seems to be one of the regions in which some kind of contact between neural and non-neural tissues is allowed in order that the action of one upon the other should be possible. Thus we find that the neurilemma sheath of the nerve-fibre is continued into the sarcolemma of the muscle-fibre so that the two tissues are brought together while no other contact is permitted.

The second type of structure is that in which most of the ultimate branches of sensory nerves appear to end. With a good deal of variation in construction, and under many names which we need not enumerate, these end-organs have certain common features of structure. In general, we may say that all forms show a strongly developed laminated capsule within which the naked nerve-fibre finds its termination. Here, again, the element of insulation is clearly recognisable and the loss of the neurilemma is compensated for by a thick capsular structure. It has been generally supposed that these various terminal bodies owe their peculiarities of structure to the function they fulfil of transforming the physical stimuli they receive into the nervous impulses which give rise to the corresponding sensations. However this may be, it is difficult to avoid regarding the common feature they all show as evidence that the sensitive terminal nerve-fibrils are in very special need of absolute insulation from the other tissues.

The third type of structure that is found is the terminal arborisation. Here the fibril breaks up, loses its neurilemma, and in its uninsulated condition ramifies among the cells of the epidermis. When we see that everywhere else, without exception, the nerve-fibre throughout its course, up to and including its termination, is provided with an absolutely unbroken insulation, we cannot fail to regard the free arborisation as a remarkable anomaly. Now we know that these free nerve-endings are those of the fibres concerned with pain sensations, for they are the only ones that occur in the cornea, where the only form of sensibility is that for pain. Pain, then, is peculiar among sensations in being originated in and transmitted by a nerve-fibre of which the terminal ramification is uninsulated.

Up to this point we have reviewed a certain amount of evidence pointing to the possibility that the peculiarities of sensibility found in areas supplied by regenerating nerves are consequences of the abnormal conditions that necessarily accompany section and suture of a nerve. We have seen that where this operation is done conditions are set up which are minutely and elaborately guarded against throughout the nervous system. We have seen that these conditions are capable of producing disturbances of nervous function, and that the only state at all resembling them allowed in the normal is that of the end-organs of the pain nerves.

CHARACTERS OF PAIN SENSIBILITY.

This remarkable coincidence naturally tempts one to make some closer inquiry into the mechanisms of pain. Pain has long been recognised as peculiar amongst sensations in having no specific stimulus. All other sensations are excitable by one stimulus which can be expressed as a simple physical process. Touch is excited by a moving contact, heat by transference of heat to the body, cold by abstraction of heat from the body. Pain, on the other hand, is excited by a whole series of stimuli which cannot be generalised under any single character except perhaps the rather fantastic one that they might be harmful if they were stronger. The anomalous nature of the pain nerve is well shown in its ready excitability by the harmless faradic current and its complete indifference to the harmful X ray.

In comparison with the stimuli which excite the other forms of skin sensibility, those which are effective for the pain nerves are relatively gross and energetic. Again, the quality of the sensation pain is quite different from any other sensation in possessing a certain explosive suddenness and in impelling to some kind of motor response. In respect to its high threshold, its intensity, and its tendency to produce motor responses the pain of normal sensibility bears in its subdued degree a decided resemblance to the general characters of sensibility in the recovering area. It seems natural to suspect, therefore, that if the latter form of sensibility owes its peculiarities to an undue exposure of the recovering axis-cylinders to somatic contact, the normal pain fibre owes its anomalous characters, in comparison with other sensory fibres, to its terminal arborisations being exposed in a certain degree to a similar influence.

According to this view the essential fact in the physiology of pain is that the sensation is set up in fibres which are maintained in a special and peculiar condition, the consequence of which is that while they are not particularly sensitive to excitation, when they are adequately excited they yield an excessive response.

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[1] The mysterious delay and even arrest in the evolution of a glioma that sometimes follows the making of a simple decompressive opening in the bone and dura over it is, perhaps, worth remembering in this connexion.

EVOLUTIONARY CONSIDERATIONS.

The result of this discussion has been to bring out the fact that in the peripheral sensory nerves there are two sharply differentiated classes of fibres; first, the pain fibres relatively insensitive to fine stimuli, but, as it were, "set" to yield energetic explosive responses; and, secondly, the fibres for tactile and thermal sensation sensitive to the finest stimuli and, as it were, muted down to yield only sensations of a mild and non-explosive quality in regard to which unperturbed discrimination becomes possible. What we may ask is the relation to one another of these two classes.

Between the lower invertebrate with a diffuse plexus-like nervous system scattered amongst the tissues, and the higher vertebrate with a definitely marked-off central nervous system, it is very obvious that a great change in the direction of centralisation has occurred. At the same time a change much less conspicuous but equally great has probably occurred in the direction of insulation and the complete differentiation and isolation of neural and non-neural tissues. Such a change, if our general argument is valid, would be necessary to effect the general damping down of sensation and the reduction of its urgency which alone would render possible the discriminative and deliberative delay of response that is characteristic of the higher animal. We need not suppose that any form of cutaneous sensation experienced by us is unrepresented in the invertebrate, but there seems to be some ground for suspecting that in the latter all forms of sensation normally have some of the urgency that survives in us only in the case of pain. According to this view it is the damping down of a large proportion of sensory fibres by complete insulation that has given us the finer kinds of cutaneous sensibility and enabled us to make deliberate rather than impulsive reactions to the majority of our contacts with the outer world.

As I have already suggested it seems difficult to suppose that in the evolution of cutaneous sensibility a stage has been passed through in which the animal was insensitive to so important a stimulus as light touch. The evidence is rather in favour of sensitiveness to moving contacts being as elementary and as primitive as any other sensory endowment of animal organisms. As long, however, as such stimuli give rise to sensations urgent in quality and impelling to immediate motor response, their value in bringing the animal into relation with its environment must be limited. It is the qualitative change which restricts these characters to sensations set up in the pain mechanism that allows the discriminative forms of sensibility to acquire their full value.

This discussion is not intended to embody a full and consistent theory of cutaneous sensibility. It is concerned with three apparently isolated groups of facts: (1) The peculiarities of sensibility in skin supplied by regenerating nerves as determined by experiment in the human subject; (2) the physiology of the pain mechanism; and (3) a certain group of facts in the structure and pathology of the nervous system bearing on its relation to the other tissues of the body. The purpose of the discussion has been to bring into correlation these three groups of observations and to show, however tentatively, that they can all be regarded as illustrating a principle fundamental to the very essence of a nervous system.

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SPINAL ANALGESIA.

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DURING the period May 1st, 1922, to Dec. 10th, 1923, I have done 400 operations under spinal analgesia on patients ranging in age from 10 to 78 years with no death that can fairly be ascribed to the stovaine employed. Two cases, it is true, died on the table, but both were in a moribund condition from perforated gastric ulcer of 36 hours' duration, and from acute gastro-duodenal ileus respectively. Another case should in fairness be mentioned. It is that of a man of 72, who died three days after radical cure of a large strangulated inguinal hernia, the cause of death being "pulmonary œdema." There was marked bronchitis before the operation. As the result of analgesia his systolic blood pressure dropped from 138 to 68 mm. He was practically unconscious during the whole operation, being apparently in a deep sleep, but he woke up and seemed perfectly normal before leaving the theatre. There was no change of colour, and respiration was slow and snoring, as might occur during sleep. The dose of stovaine was 0·05 g.

I make use of spinal analgesia in every available case, that is to say, in all operations below the diaphragm, when the patient consents and is not too young to be controlled, except in trivial operations not expected to last more than 5–10 minutes. A detailed list would take up too much space. Suffice it, therefore, to say, as showing the scope of the method, that it includes gastro-jejunostomy with appendicectomy (33 cases), cholecystotomy (14), perforated gastric or duodenal ulcer (9), appendicectomy (37 acute, 34 chronic), colotomy (15), hysterectomy (13), ectopic gestation (8), radical cure of hernia (36), strangulated hernia (14), amputation through thigh for senile and diabetic gangrene (13).

It must be admitted that 400 is a small number from which to draw statistical conclusions; nevertheless, the following comparisons may be of interest.

Of *operations that have been done under both spinal and general* (excluding, of course, all operations above the diaphragm and all below it that have not actually been done in this series by both methods), there have been :—

Under spinal (my own cases)—
400 with 22 deaths; death-rate 5·5 per cent.
Under general (surgical staff, including myself)—
1737 with 113 deaths; death-rate 6·5 per cent.

Excluding from the above figures all operations where the death-rate was nil under both methods—e.g., radical cures and inguinal and femoral hernia, curettage, piles, &c.—there remain :—

Under spinal—
241 with 22 deaths; death-rate 9·1 per cent.
Under general—
1116 with 113 deaths; death-rate 10·1 per cent.

By either standard the figures for spinal are 1 per cent. more favourable than for general.

Advantages of Spinal Analgesia.

Let me sum up what I consider to be the advantages of spinal analgesia

1. It is safer than "general." It can be used where ether is contra-indicated—e.g., in subjects of chronic bronchitis, arterio-sclerosis, chronic nephritis, acidosis, diabetes. Some of my cases are striking illustrations of this.

2. There are no chest complications. In this connexion it will readily be granted by all surgeons of experience that the fatal cases of ether bronchitis and pneumonia by no means represent all the anxieties and troubles arising through pulmonary irritation by ether in the elderly and fat type of patient. The surgeon who has never had the mortification of seeing his laparotomy wounds burst open, or their healing delayed from the strain of incessant coughing, aided perhaps by post-anæsthetic vomiting, has been lucky beyond belief. I repeat, there are no chest complications after "spinal."

3. The comfort of the patient is vastly increased. For the spinal patient there is none of the horror of "going under" or "coming out"; no struggling, no suffocation, no nausea, no vomiting, no outrageous thirst, no vile smell and clinging taste of ether. There is no post-anæsthetic headache with the technique employed. The patient can talk cheerfully to his friends immediately after the operation. There is no need for a special nurse, as after a general anæsthetic, to watch him, sometimes for hours, until he comes round. Except in gastric cases, fluids can be given by mouth immediately after, indeed, during the operation, which is much more comforting than fluid per rectum. An important point is that Fowler's position is possible immediately the patient returns to his bed, a saving of most valuable hours in acute abdomens with pelvic drainage, where every minute counts. Convincing proof of the advantage of "spinal" over "general" from the patient's standpoint is afforded by strolling successively through two wards that are in the throes of a "spinal" and "general" field-day respectively. One suggests a convalescent home, the other the deck of a cross-Channel packet in dirty weather.

4. There are practically no anæsthetic anxieties, no gagging, tongue pulling and piercing, no alternations of light with almost lethal anæsthesia.

5. Complete muscular relaxation can be counted on during the whole operation, affording excellent access to, and easy exit from, the abdomen. In laparotomies for intestinal obstruction, for example, there is no avalanche of bowels, and no trouble in closing the peritoneum. In rectal operations the sphincters are completely relaxed and need no stretching.

6. The duration of the operation is not of such vital importance, since the dose of analgesic is given once for all, and is easily sufficient for an hour.

7. There is no shock from the operation, the posterior nerve roots being virtually severed temporarily as regards the transmission of stimuli.

8. No special anæsthetist is required; an advantage in hospitals, especially at night, to the resident who would otherwise be called upon to anæsthetise an urgent case, a class of case which, above all others, demands but seldom gets the most skilled anæsthesia available.

9. The patient can be consulted during the operation when necessary, and I can recall cases where this has saved the necessity for a second operation.

10. The air of the theatre is the purer for the absence of ether and chloroform fumes, which makes "field-days" less tiring to all concerned.

Disadvantages of Spinal Analgesia.

As regards disadvantages, I know of none, provided the technique be correct, save the slight extra work which devolves on the surgeon. Only one of my cases, a member of our nursing staff, complained of headache after operation. In her case this was of a mild neuralgic character in the occipital region and radiating over the posterior surface of the neck on the right side. It did not begin until three days had elapsed since the operation (appendicectomy) and was easily controlled and cured by aspirin. Recently a man aged 70, after a radical cure of bilateral inguinal hernia (that on the left being strangulated), developed within two days what at first was taken for a large burn over the front of the left tibia; I now think this is a trophic ulcer due to injury to the cauda equina. It is healing rapidly. These two were the only cases in the whole series with sequelæ requiring treatment. Catheterisation after operations for piles and hernia is required far less frequently after "spinal" than after "general."

In three cases there was complete failure of analgesia and ether anæsthesia was required:—

1. Gastro-jejunostomy, where a badly fitting needle allowed the stovaine to escape.

2. Gastro-jejunostomy, where a full dose of stovaine was delivered intrathecally. The failure was probably due to intrathecal adhesions, as the patient was syphilitic and had had previous intrathecal treatment with N.A.B.

3. Appendicectomy. Here there was a poor flow of C.S.F., and the stovaine was probably delivered extrathecally.

In another case of gastro-jejunostomy, although analgesia was perfect, the woman was so worried about the apparent loss of her "poor legs" that ether was given to control her. (These four cases are not included in the series of 400.)

There were 13 cases in which analgesia was not perfect:—

Eight of these occurred early in the series, when, in the light of further experience, an insufficient dose of stovaine was used.

Two cases (both gastro-jejunostomy), after full doses of stovaine, required a small amount of ether. They occurred consecutively the same afternoon. The ampoules used were the first of a new box and were probably faulty.

Three cases were uncomfortable towards the end of the operation, but no general anæsthetic was given. The operations were respectively: gastro-jejunostomy (0·07 g. stovaine), for complete transverse rupture of the jejunum at its junction with the duodenum (0·07 g.), and appendicectomy (0·04 g.). In each case the dose of stovaine was too small.

Technique.

Morphia, gr. $\frac{1}{4}$ (gr. 1/12 for 10 years old), 20 minutes before the lumbar puncture, is the routine in all cases. Ordinary lumbar puncture needles, not specially fine ones, are used in all cases except the very fat, for whom I have had a special set made two inches longer than normal. The needle should be sharp, and its stylet should be an accurate bevelled fit at the point. The needle seating of the 5 c.cm. record syringe must accurately fit the needle. Both needles and syringe are sterilised by boiling in distilled water, and before being charged with stovaine all fluid should be expelled from them. The analgesic employed is stovaine with glucose (Barker's), ampoules of which, containing 0·1 g. of each in 2 c.cm., are supplied by Messrs. Allen and Hanburys. This is the maximum dose such as would be necessary in gastric and liver operations. Three-quarters of this is ample for hysterectomies and for the lower abdomen generally (unless the upper reaches of the abdomen are to be examined at the same time), and one-half suffices for operations up to the groin.

Whilst the needles are being tested and the syringe charged the patient is placed on the left side with the knees and chin held as close together as possible by the nurse. The flat of the back should be vertical. The anæsthetic couch should be capable of being raised at its middle so as to elevate the pelvis. Failing this, flat sandbags should be available for the same purpose.

I always make the lumbar puncture in the middle line, never to the side, usually between the second and third lumbar spines, sometimes between the first and second. The dense interspinous ligaments then act by their resistance, tightly embracing the needle, as a most efficient guide. Puncture of the dura can be heard as well as felt, when at once the progress of the needle is checked. It is never necessary to make more than one puncture through the skin. This is important, since this is the only painful part of the procedure. If for any reason the needle has to be withdrawn and reinserted, the same puncture can always be used by stretching or moving the skin over the spines. I never withdraw any C.S.F., and am of opinion that the cases of "spinal" cephalagia reported from Paris are due to the routine withdrawal of from 20 to 30 c.cm., and, to a lesser extent, the use of stovaine-billon, which depends for its effect on its diffusion through the subarachnoid space, a process difficult to control or limit. As soon as the flow of C.S.F. begins the dose of stovaine is slowly injected, collodion applied to the puncture, and the patient rapidly turned over on to his back. The head is strongly flexed and the pelvis raised to a height varying with the height of analgesia required. Being of higher specific gravity than the C.S.F., the stovaine-glucose runs up the cord to the desired level. Five minutes suffices for analgesia up to, and slightly beyond, the costal margin; three minutes is enough for operations below the groin. The head must be kept flexed during the transfer to the operating table, during the whole operation, and during the journey back to the ward. This prevents any danger of paralysis of the medullary centres and of post-operative headache. A screen is arranged to shut off the patient's view. It is important that there should be no unnecessary noise. Adrenalin, camphor, and pituitrin should be in readiness, though they are rarely required.

It is important to remember that the Trendelenburg position cannot be employed with safety. It is, however, found to be unnecessary even in hysterectomies, as the bowels pack away easily under the relaxed abdominal walls. The patient sometimes complains of faintness, for which, except in gastric cases, a little brandy or aromatic spirit of ammonia can be given. Slight and transient nausea or vomiting may occur (due, I believe, to an insufficient interval between the morphia and the lumbar puncture), but is never embarrassing. It is usual to give drinks of water or soda-water during the operation. There is always a fall in the systolic blood pressure, usually not more than 15–20 mm. In some cases, however, it is greater, and may cause slow pulse and pallor. In cases where this may be expected, and in patients whose initial blood pressure is low—e.g., after severe hæmorrhage—1 c.cm. of pituitrin is given after the lumbar puncture. In any case of the sort 10 minims of adrenalin (1–1000) intravenously is very effective. Pituitrin should not be given in gastro-jejunostomies. In one of my cases it caused such contraction of the gastric musculature as to make the operation most difficult.

In three cases of high analgesia the patient complained during the operation of aching, cramp-like pain under the scapula. It required no treatment, and did not interfere with the smoothness of the operation. The usual and normal experience is one of deep peace and tranquillity both for patient and surgeon.

STUDIES IN THE MALE BREAST.

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THE mammary tissue of the male is the leading, if not the only example of an external secretory mechanism which persists without actual or potential function. Fig. 1 shows a typical section of male breast. Ten specimens of the normal male breast from post-mortem subjects at the London Hospital between the ages of 6 months and 65 years were submitted to histological examination. In all glandular tissue was present.

Congenital Abnormalities.

(1) *Absence.*—Complete absence is exceedingly rare. Sir Jonathan Hutchinson described a case in a boy aged 3½.

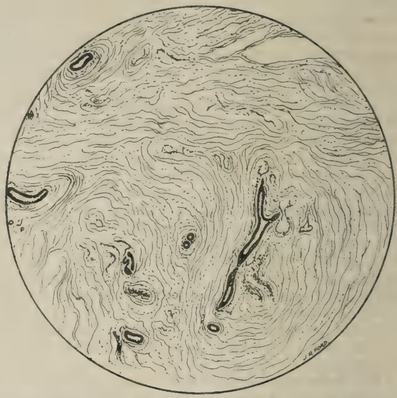
(2) *Supernumerary Nipples.*—Sir Arthur Keith has shown that accessory nipples occur upon a line extending from the anterior axillary fold to the groin. In certain communities these accessory nipples are relatively common; they were observed in 19 per cent. of 100,000 German recruits. In 100 consecutive male out-patients I was able to find them in only 2 per cent. They are liable to be mistaken for warts.

Hypertrophy.

(1) *Unilateral Idiopathic Hypertrophy.*—There are about 150 cases of this pathological curiosity on record. At puberty one breast enlarges and presents the characteristics of a well-developed female breast. Two cases of this kind have been operated upon at the London Hospital within the last 20 years.

(2) *Bilateral Idiopathic Hypertrophy.*—Gruber, of St. Petersburg, in 1866 collected 54 cases of male mammary hypertrophy. The breasts usually commence to enlarge at puberty, less frequently the hypertrophy is seen in childhood. Helen Ingleby described two cases in male children aged 7 and 8 respectively. Hyperplasia of the male breast is probably due to relative inadequacy of the internal secretion of the interstitial cells of the testes. Nevertheless, the subjects of this deformity are often virile—Chingawayo, the chief of the Zulus, a gynækomast, at the age of 55 had 40 wives and over 100 children. Although pseudolactation is most exceptional, cases have undoubtedly occurred. Schnetzer gives an account of a man whose breasts secreted 64 g. of fluid in 24 hours. Other German observers have noted similar though less striking instances. The secretion is not true milk, but has the appearance and chemical composition of colostrum. There is no evidence to show that the male has ever secreted true milk. Tribal tales of the father nurturing his motherless infant with milk from his own breast belong to the realms of surgical mythology. The ducts and acini are there, but the hormonic stimulus to activate them is always lacking. When the physiologist has isolated and compiled synthetically the specific hormone to stimulate artificially the mammary gland to physiological activity, the day may come when the male wet-nurse and the lactating bullock are commercial possibilities. The treatment of idiopathic hypertrophy is excision of the breast, for the deformity is liable to react upon the mental outlook of the patient.

FIG 1.



Drawing of microscopic appearance of typical section of male breast.

(3) *Hypertrophy Associated with Anorchism.*—It is well known that the male tends to assume female characteristics after castration in early youth. I am indebted to Prof. Turnbull for the following example of gynækomasty and gigantism in association with anorchism :—

A married man, aged 55, was admitted for heart disease to the London Hospital on April 19th and died on May 7th, 1910. At necropsy he was found to have subacute bacteriæmic endocarditis, a fibrosis of the liver of the "hob-nail" type, slight fatty infiltration of the pancreas, and a few small fat necroses in that gland. The corpse measured 6 ft. 3 in. in length, and weighed 15 st. 9 lb. A femur was excised and was found to be very large and heavy, but of normal texture. The breasts were large and prominent, but no secretion could be expressed from them ; the ducts and ductules on microscopic examination were found to be six times as wide as in control specimens from men of various ages ; the ducts contained a few desquamated epithelial cells, and some of the ductules a hyaline coagulum. The penis resembled that of a boy of eight or nine years of age. There were a few hairs on the mons Jovis, and a trace of down upon the upper lip ; the limbs and remainder of the trunk appeared hairless. The prostate was puerile. A firm cord passed on either side from small seminal vesicles to be attached to the base of the scrotum ; microscopic sections of the scrotal extremities revealed a solid cord of involuntary muscle, surrounded by adipose tissue which contained spermatic vessels and a few small bundles of smooth muscle ; there was no trace of testis or epididymis. The pituitary body was enlarged, measuring 1·4 by 1·7 by 0·8 cm.; eosinophil cells were massed in the central and posterior two-thirds of the anterior lobe, there were many conspicuous groups of large cyanophil cells in the remainder, and the tubules in the pars intermedia were distended with colloid. The thymus was replaced by fat. The thyroid gland, the pineal gland, and the supra-renal bodies were of ordinary appearance. No operative scars could be detected.

(4) *Hypertrophy following Malignant Teratoma of Testis.*—The male breasts may enlarge under the influence of abnormal gonadal internal secretion. This is illustrated by the following case:—

Motor mechanic, aged 32, admitted into London Hospital under Sir Hugh Rigby. March, 1923, orchidectomy for malignant left testis. Histological report: Malignant teratoma. May, complained of right breast getting larger. No pain. July, massive secondary deposits in lumbar glands became manifest. The breasts steadily increased in size. October, died. A necropsy showed simple hypertrophy of the breasts.

Parenchymatous Mastitis.

(1) *Mastitis of Infants.*—Is at least as common in the male as in the female. Its ætiology is closely related to the lactation of infants. On the third or fourth day of life, if the mamma of the infants be lightly pressed, a drop of colourless fluid can be expressed; a few days later there is often a slight milky secretion, which finally disappears in the third week. This is the "witch's milk," which observers have analysed and found to contain the essential characteristics of colostrum. The most ingenious (but not altogether satisfactory) explanation of this phenomenon is that the hormone which stimulates the mamma of the mother to physiological activity reacts also upon the newly-formed mammary tissue of the fœtus. In support of this theory it has been observed that in those infants whose breasts secrete plentifully the mother tends to produce large quantities of milk. The infant, with its breasts in physiological activity, is liable to the same danger of a retrograde bacterial infection as its mother. The cause of mastitis of infants is not the ignorant maternity nurse "breaking the nipple strings," for it occurs in babies born in hospital. Furthermore, the misguided midwife presumably limits her activities to the female infant's breast; and all who deal with the new-born appear to be agreed that mastitis of infants is, if anything, commoner in the male. Thus the midwife is exonerated. "Mastitis of infants" is essentially a physiological activity. It may lead to a true mastitis by retrograde infection. This true mastitis usually resolves; occasionally it suppurates. The following is a typical case in point:—

A male, aged 19 days, breast-fed infant, was recently admitted to the London Hospital under the care of Mr. A. J. Walton. The mother had been discharged from a maternity hospital seven days before. The baby's breasts were then swollen and secreting milky fluid. Two days before admission the left breast became red and painful. On admission there was a purulent exudate from the nipple and an abscess occupied the left breast. The breast was incised.

It is highly probable that some cases of persistent retraction of the nipple in after-life in both sexes are due to infantile mastitis. Primary abscess of the male breast in adolescent and adult life is seldom seen. Tuberculous mastitis is rare and usually secondary.

(4) *Mastitis of Puberty.*—This condition is frequently encountered in surgical out-patients. The boy aged about 14 complains of pain and swelling in the breast. In 80 per cent. the condition is mainly or entirely unilateral. On examination the breast is enlarged, tender, and slightly indurated. The treatment is expectant. Irritation should be avoided, and to this end braces are better substituted by a belt. Suppuration never occurs. The symptoms usually disappear in 14 days or less, but the induration was still present five weeks later in one case which was followed.

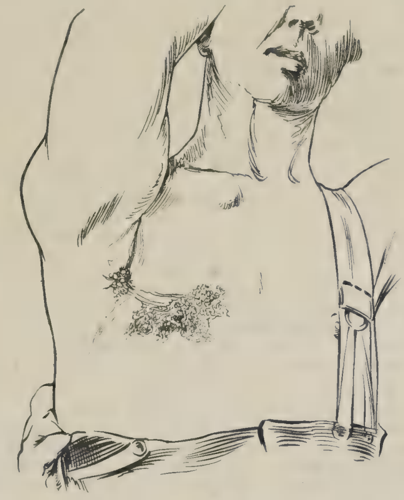
(5) *Mastitis from Local Irritation.*—This condition is another clinical entity. In civil life it usually occurs in manual labourers with ill-fitting braces. During the war soldiers carrying heavy equipment were seen with the same condition.

(6) *Mastitis as a Complication of Other Diseases.*—This is occasionally seen in mumps.

Interstitial Mastitis.

"*Chronic Interstitial Mastitis*" (diffuse fibro-adenomatous hyperplasia).—Of 11 males operated upon at the London Hospital for this condition six were over 55 years of age. It may thus be assumed that the condition occurs later in life than in the case of the female. All cases were originally unilateral. In two of them a similar condition, requiring removal, recurred in the opposite breast. Prof. Turnbull teaches that normally during the life of a woman the breast is in a condition of instability, undergoing evolution and involution not only during and after pregnancy and parturition, but at puberty, in the climacteric, and even, in many cases, at birth and during every menstruation; and that chronic interstitial mastitis is in reality an abnormal activity of similar nature. Inasmuch as chronic interstitial mastitis in the male presents precisely the same clinical features and histological appearances as in the female, it is necessary for the above explanation to show that the male breast also undergoes physiological changes. Under the headings "mastitis of infants" and "mastitis of puberty," it has already been shown that the male breast frequently enlarges at birth and at puberty, and these enlargements may be accompanied by the secretion of witch's milk. Further, a series of sections of the normal male breast at different ages showed an increase of the interstitial fibrous tissue as age advanced.

FIG. 2.



Carcinoma of breast of eight and a half years' standing. Patient cannot completely raise his arm because of cicatrisation around axillary glands (from a photograph).

Benign Neoplasms.—(1) Lipoma: Many of the lipomata classified in records of neoplasms of the London Hospital as occurring in the male breast appear to lie in the overlying superficial fascia. True interlobular lipomata are probably infrequent. (2) Fibro-adenomata: These are not exceedingly rare, and present the same clinical features as in the female. Cystadenoma of the male breast has been reported.

Malignant Neoplasms.—(1) Sarcoma: The records of the London Hospital contain two cases of sarcoma of the male breast, both beginning in the subcutis of the areola, and both occurring in men of middle age. (2) Carcinoma: Roger Williams, in collecting 2420 cases of carcinoma of breast, found that 1 per cent. of the total occurred in males. Of 14 males admitted to the London Hospital for carcinoma of the breast, more than one-third were totally inoperable.

From this fact the conclusion may be drawn that it is not modesty alone that deters the female from seeking relief for carcinoma of breast in the operable stages of the disease, but rather the absolute lack of symptoms. Of the nine men in this series on whom a radical excision of the breast was performed, the histological examinations showed seven spheroidal-celled and two columnar-celled. One of these cases, operated upon 11 years previously, recently returned complaining of hæmoptysis. Examination showed multiple recurrences in the sternum. Carcinoma of male breast runs an extremely atrophic course. Blair Bell described a case of two and a half years' duration. A case of eight and a half years' duration at present attending for X ray treatment at the London Hospital is worthy of notice :—

Carman, aged 44, in 1915 noticed breast was enlarged and bled when it was knocked. Two years later skin became ulcerated. He attended as an out-patient for the first time in August, 1923; his complaint was that he could not follow his occupation because of the inability to raise his arm above his head. He had 18 months before commenced to have difficulty in raising right arm, and 10 months later the left arm became similarly but less affected. Fig. 2 shows the extent of the ulceration and also the extensive cicatrisation of the axilla, which prevents him fully raising the arm. Further interrogation revealed that he had lost 1 st. during the past month, and had been troubled for 10 months with dry cough.

Paget's Disease. — The records of the London Hospital include one example of Paget's eczema of the nipple in a male. The patient was 43 years old. The breast was excised. The microscopic changes were typical of Paget's disease; there was no cancer.

Conclusions.

1. Congenital abnormalities of male breast are less frequent in this country than in Central Europe.
2. Infantile mastitis is not (as is commonly believed) traumatic in origin. It is a physiological activity which favours a retrograde bacterial infection, and thus may result in a true mastitis.
3. Persistent retraction of nipple in after life is sometimes due to previous infantile mastitis.
4. Evidence has been given showing that hypertrophy of the male breast is stimulated by the hormones which in the government of growth and development are antagonistic to the internal secretion of the testes.
5. "Chronic interstitial mastitis" in the male is, as in the female, essentially an aberrant evolutionary and involuntary activity. It occurs later in life in the male than the female.
6. Paget's "eczema" and every variety of new growth of the female breast have been met with in the male.
7. Cancer of the breast in man is usually atrophic in character, but the prognosis is poor, because, as a rule, relief is sought even later in the disease than in the case of the female.

My thanks are due to the surgeons of the London Hospital for permission to make use of their cases, and to the Director and Assistant Director of the Pathological Institute for their assistance.

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ENCEPHALITIS LETHARGICA WITH DIPLOPIA AS AN EARLY SIGN.

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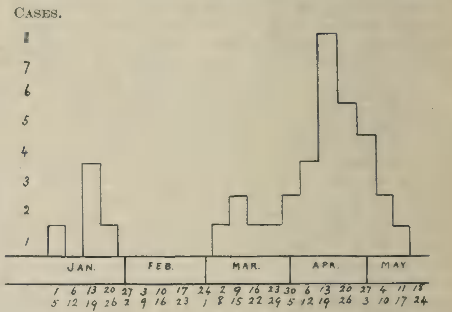
ABOUT April, 1924, there was an enormous increase in the number of patients who attended here complaining of diplopia. This is shown graphically in the figure in which there is recorded by the author, working in conjunction with Dr. L. H. Savin, the number of cases presenting themselves with diplopia every week of this year.

This sudden increase was due to the epidemic of encephalitis lethargica, of which we have had 21 undoubted cases; while we have also seen 19 cases of diplopia due to other causes. In nine of our cases there was a history of a previous febrile attack. Usually the patient "knew he had influenza, so did not trouble to call the doctor." But the diplopia soon made the patient realise there was something wrong. With this diplopia was usually associated headache. At first (12 in 21 cases) they could not sleep; but after a few days drowsiness, with difficulty in opening the eyes, asthenia, and lethargy set in. After a time in many cases the diplopia ceased and the symptoms improved, but this was not invariable. A summary of these symptoms is given in the table.



Illustrative Cases.

CASE 3.—M. G., female. Had "influenza" about March 11th, 1924; this left her weak. Other members of the house also had "flu" about this time. On April 13th she felt "seedy" and began to see two of everything; this lasted only for half an hour. On the following day she got worse and "double vision" came on again and this lasted for five days. At the time she had headaches and felt very weak and drowsy. No overcrowding or gastro-intestinal disturbance. Eyes: Pupils react to light and accommodation, lateral diplopia; paresis of external rectus. When seen on May 14th she still felt weak and drowsy but had no diplopia. Her doctor reports that she made an uninterrupted recovery.

CASE 6.—W. C., male, aged 47. No definite influenza, but had "severe cold" in chest. First had malaria in 1916 and ever since has had frequent relapses of rigors and fevers, the last attack being on April 25th. A good sleeper as a rule, but had two sleepless nights previous to April 29th, on the morning of which, whilst going to work, he saw "two buses" when there was only one. He had headaches, felt weak, and began to sleep for 12 hours at a time; and still felt sleepy in spite of the rest he had. Tendency to constipation but no gastro-intestinal disturbances. No genito-urinary disturbance. Family, food, and housing accommodation negative. Eyes: Left ptosis with vertical diplopia. Visual acuity not affected. During admission he ran an intermittent temperature, which rose to 101° F. He was somewhat lethargic and placid. Blood examination showed no malarial or other organisms. He has made an uneventful recovery.

CASE 17.—W. H. N., aged 41, was an energetic man. At the end of March he began to see double, while convalescent from an accident in which he fell off a ladder.

He had nearly recovered from the accident when double vision began. At first he could not sleep, but now he is very drowsy and weak, the "antithesis of his former self, as all this laziness is foreign to him." The double vision lasted two weeks. Diplopia is now only elicited with difficulty. No fever at time of examination. Knee-jerks and ankle-jerks brisk. Left extensor plantar reflex was found.

CASE 19.—J. E. P., male, aged 29. On April 17th he felt "out of sorts with no appetite and lack of sleep." On the same day a severe headache began, and he had pains above the navel and in one elbow. Two days after he began to see "double" and was admitted into hospital. The temperature was 100·2° F. He had bilateral ptosis, vacant expression, and paresis of left external rectus. His right grip was weak. On the following morning he seemed disorientated and wished to know why he had been kept in hospital eight days. On dressing himself he laced up his boots and found he had forgotten to put on his socks. Wassermann was negative both in blood and cerebro-spinal fluid; a cell count of latter gave 68 lymphocytes and four red blood cells per c.mm. Tendon and superficial reflexes normal. He was transferred to a general hospital. The right optic disc was congested.

CASE 20.—E. B., boy, 5 years and 7 months. "Usually a demon." Previous illnesses whooping-cough, measles, followed by congestion of lungs. On April 9th he went to bed as usual about 7 P.M. Next morning got up cross-eyed and kept opening and shutting alternate eyes, though he made no direct complaint of diplopia. He had a headache, seemed drowsy, and did not want to go to school, which was unusual. Next morning (11th) he went back to bed himself after breakfast and slept all day, except when roused for meals, and all that night. Though next day he was awake for a time in the morning, he dropped to sleep during his dinner and dosed the rest of the day. This continued till April 20th, and while the other children played he lay on the grass and slept. On the 22nd he was brought to this hospital and slept while waiting his turn for examination. His temperature was 99·6° F. Admitted to hospital he slept the whole time except when roused, when he seemed quite intelligent. Wassermann negative. He described no diplopia, but there was a definite paresis of the right external rectus and right side of the face. The right hand grip was equal to the left, and he stated he used either hand indiscriminately "when he smacked his small sister." There were no other physical signs. Transferred to a general hospital he is now well on the way to recovery.

CASE 21.—E. G., female, aged 23, usually a "lively girl"; began to see double five days after an attack of "influenza" which she treated herself. On April 12th a friend went with her for a walk and she seemed "mopy," and on the way home "her eye went into the corner and she saw double." Two days later she came to hospital with weakness of both external recti causing diplopia on looking downwards and into the distance. She had severe headache and at first could not sleep. She then became drowsy and weak, and her friend states that when he calls she is always moping about, with her head on her hands, and will sit quiet for hours.

We have not attempted to split our series into various groups as suggested by American authors. For instance, they lay stress on a "mask-like face" as a sign of one type of the disease. Certainly many cases have an expressionless appearance, but we do not lay much stress on this point. In the course of a walk down Blackfriars-road we met 226 people, of whom 57 might be fairly said to have "mask-like faces," and yet the proportion was pulled down by a number of children just out of school.

SUMMARY OF SYMPTOMS IN PATIENTS COMPLAINING OF DIPLOPIA

Case No.	Sex.	Age.	Diplopia.	Fever	Headache.	Wakefulness.	Drowsiness.	Lethargy.	Asthenia.	Mask face.	Ptosis.	Pupils.	Eye muscles.	Wassermann.	Cerebro-spinal.	Food poisoning.	Over-crowding.		Influenza.	Various.
																	Rooms.	Persons.		
1	F.	52	+	+	+	+	+	—	—	—	—	No acc. Sluggish.	S.R.I.O.	—	—	0	—	—	—	—
2	M.	26	+	+	+	+	+	+	—	+	—	—	—	—	—	0	—	—	—	Tonsillitis.
3	F.	28	+	—	?	—	+	+	—	—	—	—	R.E.R. L.E.R.	—	—	0	7	7	+	—
4	F.	53	+	—	+	+	+	+	—	—	—	—	L.S.O.	—	—	0	3	5	+	—
5	M.	30	+	—	+	—	+	+	+	—	—	—	R.E.R.	—	—	0	1	4	+	Mucus in phar. Pains in limbs.
6	M.	47	+	+	+	+	+	+	+	+	+	—	Vertical.	—	N.	0	7	4	+	Malaria.
7	F.	47	+	—	?	—	+	+	—	—	—	—	R.E.R.	Neg.	—	0	7	2	—	—
8	M.	66	+	—	—	—	+	+	—	—	—	No react.	Vertical.	—	—	—	—	—	—	Vomiting.
9	F.	60	+	—	+	+	—	—	—	—	—	—	R.E.R.	—	—	0	6	3	+	Photophobia.
10	F.	22	+	—	+	—	+	+	—	—	—	—	—	—	—	0	—	—	+	—
11	M.	16	+	—	—	—	+	—	—	—	—	—	E.R.	—	—	—	—	—	+	—
12	M.	30	+	—	+	—	—	—	—	—	—	—	L.E.R. depress.	—	—	0	5	3	+	—
13	F.	17	+	+	+	—	—	+	+	—	—	—	L.E.R.	—	—	—	—	—	—	—
14	M.	50	+	+	+	+	+	—	+	—	—	—	L.E.R.	—	—	0	3	10	+	—
15	M.	37	+	—	—	—	+	—	—	—	—	No react.	R.E.R.	—	—	—	—	—	—	Nystagmus.
16	M.	52	+	—	—	+	+	—	+	—	+	—	R.I.R.	+	—	0	2	5	+	—
17	M.	41	+	—	—	+	+	+	+	—	—	—	—	—	—	0	—	—	—	Weakness in legs. Babinski.
18	F.	28	+	+	+	+	—	—	—	—	—	—	—	—	—	—	—	—	—	Retinitis pigmentosa.
19	M.	39	+	+	+	+	+	+	+	+	+	—	L.E.R.	Neg.	Lymphocytes.	—	—	—	—	Congestion optic disc.
20	M.	5	+	+	+	+	+	+	+	—	—	—	R.E.R.	Neg.	—	—	—	—	—	Thirst.
21	F.	23	+	—	+	+	+	+	+	—	—	—	R.E.R. L.E.R.	—	—	0	8	8	+	—

The average age of our cases works out at 37 years. The disease affects males and females as 4 to 3 in our series. Our patients were not confined to any one occupation, but included clerks, housewives, bricklayers, domestics, shop-people, &c. From what we were told we are convinced that overcrowding played no important part in causation of this disease.

Eye Symptoms and Signs.—In every one of our recorded cases there was a definite history of double vision. This usually was sudden in onset and formed the prominent and early symptom of which complaint was made. This diplopia was in a good many cases associated with headaches, and was of a transient nature, lasting about one to four weeks in the mild, and for longer periods in the more severe instances. In several cases the diplopia was intermittent. The external recti were affected in 60 per cent. of the cases. In these it was usually a paresis, but in two cases from previous years (Cases 8 and 11) we have to record permanent paralysis. The vertical muscles were affected to a lesser extent and were usually combined with ptosis. Many complained of inability to keep the eyes open. Definite ptosis was recorded in three cases and was transient. No true nystagmus was recorded except in one case. We did not note any gross change in the pupils. In some cases the pupil of one side was more sluggish in its reaction to light. Only in one case was the accommodation paralysed. No fundus changes were found except in one acute case (Case 19) where we thought the right optic disc showed congestion.

General Symptoms.—In two-thirds of our cases there was severe headache associated with or preceded by diplopia. There was often a slight rise in temperature, and we think from the history fever is always present in the early stages of the disease. Wakefulness was an early sign and frequently preceded the onset of lethargy, asthenia, and drowsiness, which were almost invariably present. Even the most somnolent patient could be temporarily roused to pay some attention. Constipation, though present in some cases, was not a prominent symptom. The genito-urinary system was unaffected.

Diagnosis.—We have based our diagnosis on the clear clinical picture of diplopia, headache, fever, and wakefulness, followed by drowsiness, asthenia, and lethargy. The cerebro-spinal fluid was examined in a few cases but nothing pathognomonic was found. The Wassermann reaction is of value where the question of a syphilitic infection arises; but syphilitics are not immune to encephalitis lethargica (Case 16). Until some specific test is found we can rely very little on the laboratory except for negative diagnosis.

Relation to Influenza.—Several patients gave a definite history of previous "influenza," usually two or three weeks before the onset of diplopia. In one case all the other members of the house had "influenza" at the time and yet she was the only one to develop encephalitis lethargica. If the disease were contagious we should expect several cases in the same house, and this so far has not occurred.

Relation to Food and Botulism.—The majority of our patients were well nourished. In none of our cases were we able to assign any particular type of food as a cause in the onset of the disease. There were no gastro-intestinal disturbances.

Treatment.—Those cases which came under our direct supervision we treated with urotropine, iodides, and salicylates. We had very encouraging results; and in the absence of any specific remedy we think these drugs ought to be used more extensively. As purgatives we recommend calomel followed by salines.

Conclusions.

The series shows the type of case likely to attend an eye hospital. In view of the 100 per cent. of diplopia in our series we would urge that encephalitis lethargica should be borne in mind by the practitioner in every case of "double vision" encountered. Several of our patients first consulted their doctors for diplopia, but the real nature of the disease was not suspected. The present epidemic shows many mild and ambulatory cases, which are easily overlooked unless a systematic inquiry is made into the history.

We are much indebted to Mr. A. D. Griffith, Mr. T. W. Letchworth, Mr. E. A. Dorrell, Mr. W. J. Lindsay, and Mr. H. W. Beedham for permission to examine and report the foregoing cases.

THE INTRAVENOUS INJECTION OF ANTITOXIN IN DIPHTHERIA.

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IN an article[1] published in THE LANCET last spring, Dr. Poul Iversen, of Copenhagen, strongly advocated the intravenous route for the injection of antitoxin in diphtheria. This aroused considerable discussion, from which it appeared that the intravenous method had been tried by various authorities in this country, but the results were not regarded as sufficiently striking to warrant its employment except in very severe cases. Subcutaneous and intramuscular injections are the methods mainly employed in this country. The latter has now become the routine mode of administration in most fever hospitals, but in general practice the subcutaneous route is still most commonly used. As the three methods are being practised to varying extents it may be of interest to give an account of our experience at Plaistow Hospital, especially of the intravenous route.

Subcutaneous Injection.

This was the method generally used in the early days of antitoxin treatment, and it continued to be the routine method at Plaistow until the year 1913. Its advantages as regards safety, simplicity, and average results, are so well known as to require no comment. It has one disadvantage, however, the importance of which may not be so fully realised, and that is the slow rate of absorption of the antitoxin from the subcutaneous tissues. It was pointed out recently by Prof. Madsen[2] that the absorption of antitoxic serum follows laws which are quite different from those applicable to crystalloids such as morphine, &c., where the effect is obtained in a few minutes. Experiments have shown that nearly three days elapse before the maximum concentration of antitoxin is obtained in the blood after a subcutaneous injection, also the total quantity present is only one-third of that obtained immediately by an intravenous injection. It can be seen, therefore, that this constitutes a very important disadvantage, especially in a severe late case of diphtheria. Subcutaneous injection has ceased to be employed for routine work at Plaistow, and is now only used very occasionally in giving a desensitising dose to a patient who has had serum before.

Intramuscular Injection.

This method was first used at Plaistow in 1913, and the results proved so satisfactory that it soon completely displaced subcutaneous injections for routine work. Its advantages over that method are very definite, the most important being the much more rapid absorption of the antitoxin. Experiments have shown that this is about three times as rapid and that the difference is very noticeable in the first ten hours, which is often a critical period for the patient. The method is as safe as the subcutaneous, and the technique quite as simple. The site chosen for the injection is the outer region of the thigh. There is no danger of injuring any important structures in this area, and a dose of 12,000 units can be given quite easily. Also the injection itself is less painful in this region than in some other parts of the body. It is the method now used at Plaistow for all mild and moderate cases of diphtheria.

Intravenous Injection.

In 1903, after a very favourable report had been published by D. L. Cairns[3] on 20 cases of diphtheria treated by intravenous injection at Glasgow, Biernacki and Muir[4] tried the method at Plaistow on 45 selected grave cases. Their conclusions were very conservative, but, on the whole, suggested that the method had some value as against other modes of administration. The trial was continued during the next two years, when a further report was published by A. O. Bisson[5] on 200 cases. In the cases treated by Biernacki and Muir the injections were given by incision under a general anæsthetic, but this was afterwards discontinued, and in most of Bisson's cases direct puncture was employed without an anæsthetic. Bisson emphasised the severe reaction which occurred in some cases after the injections, but he did not express any opinion on the value of the treatment, and apparently the results were not regarded as very satisfactory, for the method was discontinued shortly afterwards.

In 1921 the writers started to give the intravenous route another trial, and the results have been so encouraging that it is now used regularly for all severe cases. During the past two years 125 cases received intravenous antitoxin, and the following details are given of the treatment and our results.

Type of Case.—The intravenous injections have been given only to toxic cases, mostly of the naso-pharyngeal type, with extensive membrane on the fauces, enlargement of the cervical glands, and discharge from the nose. These cases were selected on account of their severity from 1025 diphtheria cases which came under treatment during the past two years. Within the last six months we have used the method also in laryngeal cases and the results have been encouraging. Sixteen laryngeal cases are included in this series. All the cases were late in coming under treatment. Table I. shows the duration of the illness on admission according to the history given by the relatives.

TABLE I.—*Duration of Illness on Admission.*

Days.	Cases.	Days.	Cases.
Two	12	Five	22
Three	32	Six and over	15
Four	44	Total ..	125

Dosage.—In most cases only the first dose was given intravenously, and was followed by intramuscular injections. The intravenous dose varied from 6000 to 40,000 units, the average being 18,000 units. The largest amount given at a single injection was 24,000 units. Eleven cases had all the serum intravenously in one or two injections; the rest had the initial dose only intravenously followed by intramuscular injections. The total amount of serum given to all cases of the series varied from 12,000 to 100,000 units, the average being 48,000 units.

The following two cases are quoted from the series as typical examples of the type of case selected for intravenous injection, and also showing the amount of serum given.

CASE 1.—A female patient, aged 8 years, was admitted on June 5th, 1923, on what was stated to be the fifth day of illness. Her tonsils were greatly enlarged and covered with thick greyish membrane extending on to the soft palate and uvula and the back of the pharynx. Both sides of the neck were very swollen and there was profuse discharge from the nose. The odour of the breath was markedly diphtheritic. There was a heavy cloud of albumin in the urine. The temperature was 100·6° F.; the pulse 124 and of low tension. On admission the patient received 20,000 units of antitoxin intravenously, and this was followed by three intramuscular injections at intervals of 12 hours, the total amount given being 70,000 units. No reaction followed the intravenous injection. On June 6th the nasal discharge had ceased, the glandular swelling had subsided, and the membrane was beginning to break up. On June 24th palatal paralysis set in and the knee-jerks were absent. A fortnight later ciliary paralysis developed. There was no serum sickness. By August 7th the nasal voice had cleared up and the vision was normal, but the patient had a marked diphtheritic gait. She continued to make good progress, and was discharged on the ninety-eighth day of her illness.

CASE 2.—A male patient, aged 4½ years, was admitted at 3 P.M. on Feb. 15th, 1923, the fourth day of his illness. Both his tonsils were completely covered with typical false membrane which extended to the soft palate and uvula. The glands at the angles of the jaw were much enlarged, and there was discharge from the nose. The patient also had a croupy cough. The temperature was 101° and the pulse 128. The urine contained a trace of albumin. At 4 P.M. 24,000 units of antitoxin were injected intravenously. About 40 minutes later a reaction of moderate severity set in, lasting for about 20 minutes. The temperature rose to 104° and the patient had a rigor. The laryngeal symptoms were aggravated during this time, but subsided as the reaction passed off. Two intramuscular injections were given at 12-hour intervals, making a total dose of 50,000 units. On the 17th the nasal discharge had ceased, the laryngeal symptoms subsided, and the membrane was breaking up. On the 19th the patient vomited and the pulse was soft and irregular. By the 22nd, however, the circulatory condition had improved, and from this time the patient made an uneventful recovery. There was no serum sickness and no paralysis. He was discharged from hospital on the sixty-fourth day of his illness.

Technique.—The injections have been given by direct puncture, usually into the veins of the arm at the bend of the elbow. In two cases of the series the external jugular was used. In no case has a cutting operation been performed or a general anæsthetic given. The arm is surgically cleaned at the elbow and held by a nurse well extended over the side of the bed or cot. The nurse exerts manual compression by grasping the arm tightly at the middle of the humerus with one hand while the other hand controls the wrist. No other form of tourniquet has been found necessary. The injection is made with an ordinary antitoxin syringe, care being taken that the serum has been warmed to body temperature. The puncture wound is afterwards sealed with a collodion dressing. The whole procedure is quite simple and comparatively painless, and after some experience there is little difficulty in making the injection, even in children of 2 and 3 years. The ages of the cases in the present series are shown in Table II.

TABLE II.—*Intravenous Cases Classified According to Age.*

Years.	Cases.	Years.	Cases.
0–1	1	10–11	12
1–2	2	11–12	5
2–3	5	12–13	3
3–4	9	13–14	6
4–5	18	14–15	3
5–6	19	15–20	8
6–7	13	Over 20	2
7–8	8		
8–9	7		
9–10	4	Total ..	125

Reaction.—In the majority of our cases a definite reaction set in about 40 minutes after the injection. Its onset was usually sudden with chilliness, which soon developed into a rigor. Pyrexia was a marked feature; the temperature often rose to 104° or 105°, and in a few cases it reached 106°. The pulse was often small and rapid and the respirations quickened. In a few instances the patient was slightly cyanosed at the height of the rigor. Vomiting occurred on seven occasions, and in one case a profuse urticarial rash appeared during the reaction and remained for half and hour. No reaction occurred in 24 cases. The severity of the reaction did not appear to bear any relation to the amount of serum injected. A dose of 6000 units caused a more severe reaction in some cases than 20,000 units did in others. On the other hand, there seemed to be a distinct connexion between the sharpness of the reaction and the severity of the case. Very toxic cases often had no reaction at all, or it was only slight. This feature has been so pronounced in our cases that we have been led to regard a definite reaction as a favourable sign, indicating a good resistance on the part of the patient. Two brands of serum have been used lately, one concentrated, the other unconcentrated. They were obtained from different makers. No difference could be detected in the antitoxic value of these two serums, nor was there any marked difference in the severity of the reaction caused by them.

Although the reaction was severe in some cases the symptoms could not be described as very alarming. When a sharp rigor set in warmth was applied to the patient by means of extra blankets and hot-water bottles; sometimes a hypodermic injection of 5 minims of camphor was given and occasionally, if the patient's colour was poor, inhalations of oxygen were given for a few minutes. The symptoms usually passed off completely after about 20 minutes, and the patient fell into a peaceful sleep. Recently, however, one case has come under our care where death occurred six hours after the intravenous injection. This was a boy, aged 10 years, who was admitted at 11 P.M. on August 26th. He was in the third day of illness and suffering from a severe attack of diphtheria. 18,000 units of antitoxin were injected intravenously and 10,000 intramuscularly about half an hour after admission. Forty-five minutes later he developed a severe rigor; the temperature rose to 107° F., the colour and pulse were poor, and he vomited. After 20 minutes the rigor passed off and the patient went to sleep. Within half an hour, however, the breathing became very stertorous and he was found to be unconscious. The pupils were widely dilated, the pulse imperceptible at the wrist; cyanosis was marked and the temperature had risen to 108° F. After about 15 minutes the breathing became quieter and the colour and pulse improved, but the patient never regained consciousness. Paroxysms of dyspnœa, lasting about 15 minutes, recurred at frequent intervals, and gradually tonic spasms set in. The patient died in a convulsion six and a half hours after admission. At the autopsy the thymus gland was found much enlarged and the lymphoid tissue throughout the body greatly hypertrophied. The post-mortem findings pointed to a condition of status lymphaticus. There was no indication on admission that an intravenous injection in this case might be followed by any untoward results, and we could only ascribe the fatal issue to the status lymphaticus found post mortem.

In Table III. the reactions have been classified according to severity.

TABLE III.

No reaction	24 cases.
Mild reaction	22 ,,
Moderate reaction	52 ,,
Severe reaction	27 ,,
Total	125

In the cases classed under Mild Reaction, the symptoms were a rise in temperature, not exceeding 102°, and a slight increase in pulse-rate, but no rigor. Under Moderate Reaction were classed cases with a rise in temperature over 102° but not exceeding 104°, an increase in pulse-rate and a mild rigor lasting about ten minutes. Under Severe Reaction the symptoms were a rise in temperature of 104° and over, a small rapid pulse, a marked rigor lasting for 20 minutes, and vomiting in some cases.

Serum Sickness.—Of the 125 cases injected intravenously, 58, or 46·4 per cent., had serum sickness. The rash appeared at periods varying from 3 to 14 days, the average being nine days. Three of these had had serum previously, and in each of them a severe rash occurred three days after the injection. In comparing the serum sickness among these intravenous cases with that which occurred during the same period among 900 other patients who had intramuscular injections only, no appreciable difference was found either in the date of onset or the severity of the sickness.

Results.

Fatal cases: 15 deaths occurred among the 125 intravenous cases. This gives a fatality-rate of 12 per cent. As these cases were selected on account of their severity from a total of 1025 cases which have been under treatment during the past two years, this mortality figure is not regarded as unsatisfactory. The following case is quoted from the 15 deaths as a typical example of the fatal cases.

CASE 3.—A female patient, aged 6 years, was admitted on Sept. 24th, 1922, on what was stated to be the fourth day of illness. Both her tonsils were much swollen and were covered with thick greyish membrane which extended on to the uvula and a portion of the soft palate. Nasal discharge was profuse and both sides of the neck were much swollen. The patient looked very toxic. The temperature was 100°, the pulse 120 and of low tension; 18,000 units of antitoxin were injected intravenously on admission, and this was followed by four intramuscular injections. The total amount of serum given was 62,000 units. A mild reaction followed the intravenous injection, the temperature rising to 102°. On the day after admission the nasal discharge was blood-stained, and ecchymoses were present round the sites of antitoxin injection. The urine became very scanty and was loaded with albumin. Vomiting began two days later, and the pulse became almost imperceptible at the wrist. Death occurred on Sept. 28th, four days after admission and the eighth day of illness.

Among the 900 cases which had been treated by intramuscular injections during the same period there were 46 deaths, a fatality-rate of 5·17 per cent. This includes 20 cases which died from laryngeal involvement. The total fatality-rate among the 1025 cases, which includes the 125 intravenous cases, has been 5·95 per cent.

Paralysis.

Thirty-two of the 125 intravenous cases had diphtheritic paralysis. This gives an incidence-rate of 25·6 per cent. The paralysis was mild in 15 of these cases and severe in 17. Among the 900 cases treated intramuscularly 45 had paralysis, an incidence-rate of 5 per cent. In 30 of these the paralysis was of a mild type and severe in the remaining 15. Altogether there were 77 cases of paralysis among the total 1025 cases, giving an incidence-rate of 7·5 per cent. The higher paralysis-rate among the 125 intravenous cases can be accounted for by the severity of the disease in these cases.

Conclusions.

Our experience during the past two years has convinced us that the intravenous injection of antitoxin is of great value in severe cases of diphtheria. The toxic symptoms subside much more rapidly than after an intramuscular or subcutaneous injection. The onset of paralysis also appears to be diminished. We were impressed by the number of cases in the above series which escaped paralysis. On the other hand, we do not advocate giving antitoxin intravenously to mild and moderate cases, where intramuscular injections have proved sufficient. As the reaction which usually follows an intravenous injection is sometimes very severe it seems unnecessary to expose moderate cases to the discomfort and even risk of such a reaction. For this reason we have only used the intravenous route in severe cases where there has been a definite risk of the disease proving fatal. The injection itself is simple and comparatively painless and it can be performed in young children.

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2. Madsen, Th.: Journal of State Medicine, 1923, i., 101.
3. Cairns, D. L.: THE LANCET, 1902, ii., 1685.
4. Biernacki, J., and Muir, J. C.: Ibid., 1904, ii., 1774.
5. Bisson, A. O.: Ibid., 1906, ii., 929.

Corrigendum.—Prof. H. M. Turnbull writes that the final sentence in his pathological report to Dr. A. W. M. Ellis's paper on Hyperglycæmia in Acromegaly (THE LANCET, June 14th, p. 1203) should run: "It can be called 'a mixture of neuroblastoma and embryonic neuroma.'"

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LONDON DERMATOLOGICAL SOCIETY.

OCCUPATIONAL DERMATOSES.

ON June 11th Prof. MORITZ OPPENHEIM, of Vienna, delivered the annual oration of the Society at the Hospital for Skin Diseases, Leicester-square, on Affections of the Skin caused by Occupation and Profession. There was a goodly attendance, and the distinguished professor was introduced by Dr. J. M. BUNCH, President.

Dr. Oppenheim commenced by naming many well-known workers in this division of skin disease in various countries, including Adamson, Lett, MacLeod, and Sequeira. He said it had been computed that between 20 and 30 per cent. of all skin cases belonged to the occupational category. In these, cauterisations of the skin due to employment came first in frequency, followed by eczematoid conditions, while at the bottom of the list were the impetigoes. Burns and cauterisations of the skin might be due to electricity, to X rays, to radium, to acids. It was necessary to distinguish between a natural delicacy or susceptibility of skin and the action of irritants on the skin. The normal predisposition of the skin to react to these agencies and show lesions might be either heightened or diminished, therefore there was a distinct pathological susceptibility, and this might be either congenital or acquired. Congenital predisposition, in certain respects, was met with in the case of the brunette and the blonde. Various types of body had also to be taken into consideration, for both body and skin, in fact the whole system, must come into review. In the case of such congenital skin diseases as seborrhœa, ichthyosis, and psoriasis there was seen to be a constitutional predisposition to respond to irritation.

The irritations which attacked the skin were of complicated nature. He had experimented with such an apparently simple substance as vaseline. Sometimes it caused hyperkeratosis, at other times impetigo, at still others hyper-pigmentation. When it produced hyperkeratosis there was in the vaseline an excess of paraffin, and when hyper-pigmentation resulted there was an excess of colloid bodies. He showed the slide of an artificially produced vaselinodermia on the face of a child on which vaseline had been applied. There were to be seen many hyperkeratotic papules. In another case in which vaseline had been applied there was a dermatitis, with swollen eyelids and impetigo, due to the colloidal constituent, and probably also aided by bacteria.

The stigmata of occupational dermatoses were mostly transitory. He showed pictures, mostly in colour, of the hands of a dyer, showing a yellow staining, of a carpenter whose hands were stained with sulphuric acid, of a tinker whose hands had numerous fissures and callosities following the use of the tools of his trade. A shoemaker showed extensive lichen spinulosus on the chest due to the use of pitch at his work, known as a lower degree of "pitch skin." A miller showed a dark tattooing on the wrist caused by the impact of hot pieces of steel from the chisel when it was being sharpened on a grindstone; this stigma endured for a much longer time than most. Chronic cauterisations, resulting often in ulcers, were very frequent; they were caused mostly by lime, sulphuric acid, chromic acid, arsenic, &c. The skin changes caused by the passage of a strong electric current were due to the impregnation by the current of minute dust and metal particles. The condition known as chronic Rontgen dermatitis sometimes led to cancer. Soot, dust, and some powders caused an inflammation of follicles by obstructing them. Also, there were sweat gland affections, comedosis, and abscesses due to infection with staphylococci, the latter occurring in sebaceous glands, too. Benign skin affections, such as papillomata, were caused by petroleum, Rontgen rays, aniline dyes, &c. An arsenic burn on the foot was surrounded by a halo of inflammation. A typical burn produced by explosion of benzine was also shown. The man was working with his shirt open at the chest when the explosion took place, and the chest was covered by the burn. A man burned in a munition factory by an explosion of gunpowder had sordes-like lesions on the lips and much tattooing on the face. A galvaniser had acute nitric acid cauterisation on the back of the hand; there were yellow sores surrounded by irregular haloes, and in certain parts there were blisters. A tanner showed acute cauterisation ulcers on the wrist and chronic ulcers on the tips of the fingers. Other ulcerations shown were produced, respectively, by potassium, ammonia, and sulphuric acid; in some instances there were pre-ulceration blisters. Trench-foot of the second and third degrees was also depicted; there was a huge bullous affection of both feet, and a great degree of disfigurement. Amputation was necessary. Sulphuric and oxalic acid burns showed a black and deep ulceration, and it was necessary for such patients to remain from work for a long period. A skin change shown resulted from the passage of a current of 110 volts. Metal-dust impregnation, chiefly copper, produced a very enduring stigma; the tattooing was mostly in the deeper layers of tissue. The wire conveying current of very high power touched a man's body and produced a deep groove in the tissue beneath the shoulder, with radiating lines of cauterisation in the near neighbourhood. The man died from the shock. Radium burns produced a charring with crater-like ulcerations. The man had had radium applied for psoriasis vulgaris. A man with folliculitis of forearm conveyed it to his genitalia by contact. Pitch caused comedone formation and folliculitis, with acne scars and sycosis-like confluent lesions, with hyper-pigmentation. A paraffin worker developed a benign tumour in the scrotum, and an arsenic worker exhibited a cancer-like growth. Onychomycosis was found in bakers, and certain substances handled in the course of occupations caused a falling out of hair and a hyperkeratosis. Toxidermias, dermatitis circumscripta, and eczema resulted from a sensitive condition of the skin; there was a suitable medium for the entrance of chemical irritants; there might be an acute and generalised affection of blood-vessels. In eczema there was a change in the reaction. Photographers suffered from nail affections due to the use of silver lotion. Among the illustrations of toxidermia was one of the head of a gardener who had swollen eyelids, forehead, and nose following irritation of a boxwood tree, and the hand of a carpenter whose poison was the resin of satin-wood. One case had desquamation of the skin of the face following the use of jute; another had dermatitis circumscripta following work in a boot-polish factory, and a petroleum worker showed the same condition. A galvaniser exhibited desquamation, redness, and superficial sores in the folds of the skin. Healing took place after ceasing work for eight days, in which respect it was in striking contrast with eczema.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

A MEETING of the Section of Medicine was held on May 30th, Dr. T. G. MOORHEAD, the President, being in the chair.

Dr. L. ABRAHAMSON read a paper on three cases of

Epidemic Encephalitis with Painful Myoclonus.

The first case was that of a male, aged 11, who was admitted to hospital on March 13th last in an unconscious condition, with pupils sluggish and eyeballs oscillating slowly from side to side. Examination of the abdomen showed sharp spasms of the upper recti at a rate of about 60 per minute. The spasms were not completely rhythmical. Tendon reflexes and abdominal reflexes were absent. Lumbar puncture yielded a clear fluid with lymphocytosis. On the day of admission the patient developed an epileptiform attack; two days later slight strabismus was marked on the right side. On this day consciousness returned and complaint was made of abdominal pain. This subsided after two days and intense pruritus appeared which lasted for a fortnight. The abdominal spasms continued without remission. Pyrexia was slight and remittent. The patient was discharged from hospital on May 15th; spasms were still present in the recti and external oblique muscles.

The second patient, aged 19, was admitted to hospital on March 23rd complaining of severe abdominal pain. Examination of the abdomen showed the presence of sharp, but not completely rhythmical contractions of the muscles at the rate of about 70 per minute. The muscles involved were the recti and the right external oblique. The contractions were very forcible and were associated with intense pain. Temperature 99° F., pulse 102, respirations 26 per minute. The pain increased and the abdominal contractions were so forcible that the bedclothes were lifted with each spasm. Lumbar puncture yielded a clear fluid under increased pressure. Later the pain became agonising, the contractions spread to other groups of muscles and were so violent that they shook the bed. After some days the spasms and the pain subsided and delirium set in. The delirium was of the "occupational" type. The patient was noisy, restless, and at times difficult to control. Severe pruritus occurred and it was found necessary to bandage the hands. Transient ptosis was observed on April 2nd. Delirium gave way to unconsciousness and coma. The patient died 17 days after admission. A post-mortem was performed by Dr. E. C. Smith. The naked-eye appearances consisted of small hæmorrhages into the meninges. The vessels of both the brain and cord were injected and some of them were thrombosed. In sections, minute hæmorrhages were seen in the cortex, the pons, medulla, cerebellum, and cervical region of the cord. Perivascular infiltrations were found which consisted of lymphocytes with occasional plasma cells, arranged in a halo-like manner round the vessels. The changes were most marked in the region of the optic thalamus, pons, the island of Reil, and the cervical region of the cord. Hæmorrhages were found in the heart, spleen, kidney, and liver. Numerous groups of plasma cells were found in the spleen.

The third case was that of a male, aged 57, who was admitted to a nursing home on May 18th complaining of pain in the back of the neck and of insomnia which had lasted for three days. Examination showed spasms of the right upper rectus, right trapezius, and right erector spinæ muscle. These spasms occurred at a rate of 16–20 per minute and were irregular both in strength and in time. Spasms continued and spread to other groups of muscles. Pain was intense and insomnia complete until the 20th, when the patient slept for some hours. After this spasms and pain were absent for some days, but delirium of the occupational type set in. At times control was necessary. On the 25th spasms reappeared in various groups of muscles, delirium became continuous, and severe pruritus was noted. Ptosis of the right eyelid was noted. Some days later unconsciousness set in, the breathing became stertorous, the sphincters relaxed. Picking at the bed-clothes was continuous. On the 29th the patient died. The temperature chart showed a remittent form reaching 102·6° F. on the day of death.

Dr. Abrahamson stated that of 12 cases of encephalitis seen by him recently, seven had belonged to this type. He dealt with the question of nomenclature and suggested that "encephalitis multiformis" would be a more appropriate title than any of the names suggested hitherto.

Discussion.

Dr. R. J. **ROWLETTE** said that at Mercer's Hospital during the last couple of months there had been five cases of encephalitis, and the difference in symptomatology between these cases and cases of the disease which he had seen in 1918 and 1919 was striking. At that time lethargy had been the most striking feature about the cases, but now there was myoclonus, alternating with lethargy and delirium. The lethargy varied very much, as sometimes it was very slight and the patient could be roused, and at other times the patients went from a lethargic state into a state of coma, from which they could not be aroused. He had noticed that when the patients were aroused they were quite alert and could answer questions intelligently, but they only remained like that for a very short time, and soon became delirious again. The muscle most commonly affected with myoclonus was the rectus abdominis, and the left rectus abdominis was usually more affected than the right. It was, of course, noticeable in other muscles too. The type of encephalitis now seen was an active type, whereas in 1918 and 1919 it had been a more passive type. He thought that the difference in the symptomatology of the disease could be regarded as being due to the different parts of the central nervous system which were affected. It had to be remembered that one was dealing with an infection which might attack any part of the nervous system. It had been suggested that the disease was a manifestation of influenza, but he did not agree with this statement. There had been cases of encephalitis in other countries before the influenza epidemic occurred, but it was, of course, possible that these cases were forerunners of the epidemic. It had also been suggested that the disease might be due to Pfeiffer's bacillus. If this was the case, it was curious that this bacillus was not separated readily from the lesions in the central nervous system. He was of opinion that so far there was no established connexion between any bacillus and this disease.

Dr. J. **O'DONNELL** drew attention to three typical cases of the disease which had come under his notice. One was that of a girl, who at first was choreic in type, but gradually passed into a lethargic state, with loss of vision. The second case was a man who had been lethargic from the beginning, and had had visual disturbance, accompanied by myoclonus, and now greatly resembled a case of peripheral neuritis. The third case was a male student, who at the beginning complained of generalised pains and defective vision. Acute mania set in, followed by delirium, and the patient got violent and had to be removed to an asylum, where he died after three days.

Dr. W. C. **MACFETRIDGE** drew attention to the fact that while none of the cases reported by Dr. Abrahamson had complained of eye symptoms, all Dr. O'Donnell's patients had suffered from defective vision, and that while some of the patients were lethargic, others suffered from insomnia. He agreed with Dr. Abrahamson that the name lethargica should be given up, as it was a misleading one. It would be interesting to know how the patients got on after they left hospital. He understood that some of them afterwards developed Parkinson's disease. He had seen one case in which the principal symptom had been loss of vision, but this particular case had made a complete recovery. It was apparently a disease the severity of which varied greatly, and although there were some fatal cases, he thought that there were a great many mild cases which got completely well.

Dr. W. G. **HARVEY** said he had recently seen a case of a little boy who was of the choreic type, and had a perfectly regular clonus on the rectal muscles of the thighs. Although the boy complained greatly of abdominal pain, Dr. Harvey had not been able to satisfy himself that this pain was due to clonus of the recti muscles. There was no marked rigidity of the abdomen. There was insomnia at first, but the patient soon became lethargic. It was interesting to note the difference in type of cases of this disease—some went through an irritative stage at the beginning, and gradually passed into a lethargic state, but most cases he had seen seemed to be lethargic from the beginning.

Dr. A. R. **PARSONS** asked if optic neuritis was ever found in cases of encephalitis, as in all the cases he had seen the fundus had been perfectly normal. The cases he had seen had had abdominal pain, but no myoclonus. In one case he had seen catalepsy, and this patient, after being unconscious for several days, recovered. Any cases he had seen in 1918 had been Parkinsonian in type, but all his cases lately had been delirious.

Dr. H. **BEWLEY** asked what the prognosis in cases of encephalitis was. He had seen a case three years ago, and although the patient recovered, for a year afterwards she was melancholy and stupid. He had lost sight of her since, so did not know whether this condition still persisted. This year he had seen a student who had apparently had an attack of acute mania, and he also had distinct diplopia. After about a fortnight this disappeared and the patient left hospital and was sent home. That was three months ago, and he had recently seen the patient again and his mind was not right, as he could not concentrate properly upon anything. It would be interesting to see whether this condition persisted, or whether the patient's mind gradually got normal. Having regard to these two cases, he would not like to give a prognosis of real recovery in acute cases of encephalitis.

Dr. C. **PRESTON BALL** asked how many of Dr. Abrahamson's cases had got well while in hospital, and how they got on when they left. He had recently seen a case of typical Parkinson's disease, and the patient said that he had not long left hospital after recovering from encephalitis.

Presidential Summing-up.

The **PRESIDENT**, in summing up, said that the discussion that evening had mainly centred on the great variety of symptoms presented by the disease, and on the apparent change of type since the disease had first become prevalent. He himself had only seen three myoclonic cases, through the kindness of Dr. Abrahamson, but he had seen a fair number of cases of the choreic type, and many with lethargic symptoms.

Regarding the ultimate prognosis, he was inclined to think that, on the whole, children were more likely to make a complete recovery than adults. At any rate, he knew of some children who had suffered from the disease in 1919 and who had remained in every way normal since then, while in most adult cases nervous disorders of one sort or another usually supervened. Concerning treatment, he thought all were agreed that symptomatic methods were alone of any use. He had himself given up lumbar puncture, except as an aid to diagnosis. The relationship of encephalitis to influenza was still sub judice, and he knew of no well-confirmed evidence that influenzal vaccines had had the least effect on the course of the disease.

Dr. **ABRAHAMSON**, in replying, stated that of the 12 cases referred to by him, four had died. Treatment had been mainly symptomatic. Vaccine treatment was, in his opinion, empirical and useless. Four cases seen by him in consultation had been treated by a vaccine (antigen) of Pfeiffer's bacillus; of these two cases had succumbed. In one of his cases the patient developed hæmaturia, attributed by him to the use of large doses of hexamine. He referred to the occurrence of abortive cases. Lumbar puncture had not yielded much help. He agreed that the prognosis was better in children.

Dr. **PARSONS** read notes of a case of Universal Herpes, which were discussed by Dr. L. L. **CASSIDY** and Dr. N. M. **FALKINER**.

Dr. **HARVEY** read a note on 14 patients with Fur Dermatitis.

SCOTTISH SOCIETY OF ANÆSTHETISTS.

AT the annual meeting of this Society, held at the Royal College of Surgeons, Edinburgh, on May 17th, Dr. H. P. **FAIRLIE** (Glasgow) opened by reading his presidential address on the subject of

Anæsthesia: its Present Position.

Dr. Fairlie introduced his subject with a consideration of the position and status of the anæsthetist. He said that while in London the administration of anæsthetics had been more or less in the hands of the specialist since the discovery of the anæsthetic properties of ether and chloroform, such names as Clover and Snow being sufficient reminders of this fact, in Scotland the specialist was of more recent origin. Until about 20 or 30 years ago the Scottish surgeon depended, to a considerable extent, for the anæsthesia of his patient on the assistant, house surgeon, or general practitioner in charge of the particular patient on whom he was operating. But with the amazing developments which had taken place in surgery during those years the demands on the administrator of anæsthetics had grown, and now the anæsthetist in Scotland could regard with satisfaction the improvement which had gradually taken place in his lot. No doubt, he said, there was still room for improvement in several directions as, for example, in the information vouchsafed to the anæsthetist in the booking of appointments. It was hardly justice to patient, surgeon, or anæsthetist to have the bare fact of an appointment at a certain time and place communicated, as there was a considerable difference in the methods required for anæsthetising, say, a whitlow, a cholecystitis, a goitre, and a cleft palate.

In consideration of the anæsthetics at present available, the speaker confined his remarks to those which were in more general use, and to the newer methods of administering them. On the old controversy on the respective merits of ether and chloroform he did not intend to say much. His choice of anæsthetic, whether ether, chloroform, or other drug, depended on the exigencies of the particular case. In connexion with chloroform he touched on three points. He did not agree with Flagg, who said in his recent edition of "The Art of Anæsthesia":

> "In the author's experience, chloroform has completely given way to ether administered by intra-pharyngea methods. This condition holds with the single exception of oral cases in which the actual cautery is used."

If it was used, however, it should be done with very great circumspection, and, in the speaker's opinion, by some form of dosimetric apparatus which controlled the vapour strength. Further, chloroform should not be given at all in acute sepsis, particularly of the abdomen, because of the risk of acidosis, and finally it should not be used except by the expert. Adequate anæsthesia could be maintained, and anæsthetic mortality considerably reduced, by a more general employment of open ether in the hands of house surgeons and those who only occasionally gave anæsthetics.

With regard to ether, so many new methods and appliances had been introduced that it was almost impossible to keep up to date. The speaker considered the most valuable innovation in giving "open" ether was the perhalation method which Dr. A. Ogston described to the Society two years ago. A slight modification of it which he found most useful was to combine it with the bomb method of Wilson and Pinson, leading the tube from the bomb between the layers of gauze in Ogston's mask, and thus introducing warmed vapour instead of dropping liquid ether on to the gauze. In addition to the advantage which the warm vapour gave, there was also the freeing of the hand which was usually occupied with the drop-bottle. Shipway's apparatus for warmed chloroform and ether vapours he found invaluable in face, mouth, and nose operations, where a mask was inconvenient to the surgeon. Rectal anæsthesia, using Gwathmey's ether oil mixture, was of great service in laryngoscopic and bronchoscopic examinations. The intra-tracheal method, either with ether or chloroform, constituted, in his opinion, the greatest advance in the science of anæsthesia. The confidence which it inspired both in surgeon and anæsthetist in four classes of operations was of a nature that no other method achieved. These four classes were: (1) extensive face and intra-oral operations; (2) removal of goitres or other tumours about the neck; (3) lung surgery; (4) any operation entailing awkward positions for the patient.

Although gas and oxygen had been used for anæsthesia for over 50 years, its vogue had greatly increased lately. It had very definite limitations, but having strict regard to those it made an almost ideal anæsthetic in its own field. Administered after preliminary narcotics, with re-breathing, and with the minimum of ether or chloroform, it possessed very pronounced advantages in operations where a great degree of muscular relaxation was not demanded. Even in the latter class of case more use might well be made of it provided the surgeon was prepared to use novocaine locally in the tissues of the abdominal wall. Dr. Fairlie said that he did not restrict the use of oxygen to its accompaniment of nitrous oxide. His inclination was to use it more and more along with ether and especially chloroform. Any mixture of anæsthetic vapour and atmospheric air suffered from the high proportion of nitrogen. If the need for deep anæsthesia arose, this acted as a handicap—in other words, anæsthesia might be pushed further, with a greater degree of safety, in presence of a higher proportion of oxygen than the atmosphere contained. So in abdominal operations, particularly those of the upper abdomen, he frequently found a stream of oxygen led under the mask of great assistance. It prevented the onset of cyanosis with accompanying rigidity. It was useful in any operation where the patient, for one reason or another, had a tendency to cyanosis.

In conclusion, he pointed out that he had made no reference to spinal anæsthesia, from the feeling that it would introduce too large a subject.

In the discussion which followed, Dr. J. S. ROSS (Edinburgh) said that it was important that the administration of chloroform should not become a lost art, and that it should be adequately taught to students. With regard to rectal anæsthesia, he considered that if surgeons would inform the anæsthetist in advance of patients who were terror-struck, rectal anæsthesia might have a wider field of usefulness. He held that no theatre was properly equipped if it did not contain an oxygen cylinder with oxygen in it. The danger of nitrous oxide and oxygen lay in attempting to handle with it patients of too powerful a type, and in being ashamed to use adjuvants such as ether and possibly a little chloroform.—Dr. Ross Mackenzie (Aberdeen) agreed with previous speakers that students should be adequately instructed in the administration of chloroform. At the Sick Children's Hospital, Aberdeen, the majority of cases were conducted under nitrous oxide and oxygen combined, with very careful use of local infiltration with novocaine. With this help he considered that nitrous oxide and oxygen covered the largest field in children. An unusually high proportion of oxygen was required for a child and a mere trace of ether vapour during the induction period. There was very little after-sickness and a very rapid recovery. He had used rectal anæsthesia a good deal with children and personally liked the immediate results, but it threw a good deal on the nursing staff, and surgeons were inclined to think that there was more after-reaction than with the inhalation method.—Dr. A. Ogston (Aberdeen) thought the very best relaxation could be obtained with gas oxygen if, in addition to the local infiltration at the seat of operation, the intercostal nerves were blocked as they emerged from the lower spaces.—Dr. J. Johnson (Aberdeen) agreed as to the importance of adding oxygen to open ether; particularly was this of value when the induction was expedited by the preliminary use of open ethyl chloride which was apt to lead to a little cyanosis unless oxygen was added.—Dr. A. Mills (Dundee) did not agree as to the teaching of chloroform to students, considering it much more important to teach them open ether well and to impress on them the added dangers of chloroform. With regard to intratracheal anæsthesia he thought it was often unnecessary; if the surgeon were careful to mop out blood most of these cases could be met by pumping ether vapour with oxygen through the nose into the pharynx.—Dr. J. S. Frew (Glasgow) confirmed the value of oxygen with open ether or chloroform.—Dr. F. L. Napier (Glasgow) said he had come to rely very largely upon the Shipway apparatus for ether with a little chloroform added. He also was a great believer in adding oxygen to the combination, and used it to bubble through the apparatus instead of air.—Dr. W. Barras (Glasgow) agreed with Dr. Napier. He said that where malignant disease was present in the mouth he avoided the intra-tracheal method if possible, as he considered it quite a possibility that the catheter might carry infection down into the lung.—Dr. Torrance Thomson (Edinburgh) considered it certain that when out in the world young practitioners would use chloroform very freely, and he therefore thought it essential that in their student days they should be taught it. He used oxygen both with open and closed ether and had found Pinson's oxygen valve of great value. He was a warm advocate of the use of the intra-tracheal method for abdominal sections, particularly for a high operation such as gall-bladder. He had had good results with nitrous oxide and oxygen given by this route, but found it very expensive. He had had very good results with ethanesal, but upon the whole he doubted whether it was really any better than a good brand of ether. For some months he had been using the Pinson bomb and regarded it upon the whole as the best method for open ether.—Dr. Logan Turner (Edinburgh) expressed his appreciation of the invitation to him by the Society to attend the meeting and join in the discussion. He had always favoured the closest coöperation between various specialists, and certainly between the surgeon and the anæsthetist. He quite agreed that the anæsthetist should be informed precisely of the nature of the case and of all relevant points in connexion with it as soon as the appointment was made. In these days he had found very often that the anæsthetist's preparations required to be as complicated as, or more so, than those of the surgeon.

Dr. Fairlie, in reply, said that with regard to the teaching of the students, he personally favoured a deliberate attempt being made to wean the new members of the profession altogether from the habitual use of chloroform, and thought, therefore, that in teaching all the emphasis should be laid upon the simpler methods of giving ether.

Dr. J. H. Gibbs (Edinburgh) opened a discussion upon

Methods of Anæsthesia in Nasal, Dental, and Other Oral Operations.

He explained that he would simplify his remarks by speaking mainly of the methods which he personally used, and would exclude mostly from his observations the question of individual peculiarity in the patient, considering the anæsthetic solely in connexion with the locality or disease to be dealt with and not with any constitutional complaint such as cardiac or pulmonary disease. Mouth and nose operations had this peculiarity that the interests of the surgeon and the anæsthetist in many cases seemed to clash; each wanted to get at the patient at the same time. If ether was to be given he insisted upon a preliminary dose of atropine. One-hundredth of a grain was usually an adequate dose. If hæmorrhage was not likely he added heroin or morphia. Upon the whole, he thought that heroin gave less after-effects. His stock method for longer cases, such as antrum operations, was to induce with ethyl chloride and ether given with the Clover instrument and then change over to a Junker or Shipway, passing the vapour where possible along a catheter through the nose into the pharynx. For tonsils or adenoids in subjects up to 12 or 14 years of age he habitually used ethyl chloride, regarding 4 c.cm. as the maximum dose; latterly, he had been adding 1 c.cm. of ether and desired an expression of opinion from other members as to whether this addition increased the safety of ethyl chloride. For enucleation of tonsils, for which ethyl chloride alone would be inadequate, he used the Clover method of ether, getting a forecast from the surgeon as to the length of time which it would be desired the patient should remain under the anæsthesia. Here it was very necessary that the patient should have atropine, but morphia was undesirable. For paracentesis of the antrum nitrous oxide often sufficed. For mastoid operations he induced with ethyl chloride and ether in the Clover instrument, and followed up with open ether. For dental work he found that nitrous oxide or nitrous oxide and oxygen as a single-dose anæsthetic sufficed for anything up to three teeth, as a rule. For cases taking a little longer than this he added 1 c.cm. of ethyl chloride at the last moment. The patient need only take about five breaths of this, and some 10 seconds or more were thus added to the available anæsthesia. For cases demanding even longer time he used up to 2 or 3 c.cm. of ethyl chloride. Working on these lines, he had given 30,000 administrations of ethyl chloride or ethyl chloride and gas without fatality until recently, when he unfortunately had had a death in the dental department of the Royal Infirmary. The patient was sent to him for the extraction of 15 very septic teeth; she was absolutely panic-struck; he began the anæsthesia by giving her 3 c.cm. of ethyl chloride by the vapour method; during the early part of the administration she screamed almost continuously; she finally, however, went under, the colour remaining good. One tooth was extracted, when a slight amount of pallor and faintness of respiration was observed, the pupil remaining small, and he proceeded, therefore, to take out another tooth. The pallor then increased and he therefore stopped operating and had her lowered to the floor and commenced artificial respiration. The surgeon on duty was sent for and opened the abdomen in order to give cardiac massage, but by this time the patient was dead and did not respond in any way to the treatment. The patient was known to have suffered from rheumatic fever, but her heart had been thoroughly examined by a physician before the anæsthetic and was believed to be perfectly sound. Owing to difficulties with the relatives it was most unfortunately impossible to secure an autopsy. It was arguable that this death was mostly due to the delayed effects of fright, but since the occurrence he had resolved always to add 1 c.cm. of ether to any ethyl chloride which he gave. There could, of course, be no absolute proof that this added to the safety, seeing the infinitesimally small death-rate from ethyl chloride given in the doses that he advocated. He had used nasal gas and nasal gas and oxygen extensively, but found that the ordinary nasal inhaler interfered a good deal with the work of the dentist. He therefore preferred his own appliance, which he showed to the meeting, where the gas was led by tubes into each side of the nose, the anterior nares being plugged by his instrument around the entering tubes. In working with nasal methods he had found great advantages from the use of a large sponge pushed on to the dorsum of the tongue; even with single-dose methods he used this sponge, believing that it prolonged the anæsthesia without producing any serious embarrassment of respiration. Small sponges as used by some dentists were dangerous. He emphasised the danger of anything but a straight sitting-up position for extraction of teeth. He had an extensive experience of intra-tracheal anæsthesia, but even now he thought the best results were obtained in malignant diseases of the mouth by doing a preliminary tracheotomy and packing the upper orifice of the larynx.

Dr. **LOGAN TURNER** said that he personally accepted the position that the anæsthetist as a specialist was entitled to choose the drug and method which should be used, but he pointed out that by law it was the surgeon who was responsible if anything happened. The surgeon and anæsthetist must be accustomed to work together and must have mutual confidence in each other's skill. He was a warm advocate of ethyl chloride given by vapour method for tonsils and adenoids in children (having had over 17,000 cases at the Royal Infirmary with only one fatality in 15 years), but not adults. He did not consider that by it sufficient relaxation of the muscles of the palate could be obtained to give the operation by the reverse tonsilotome a fair chance. Even for ethyl chloride he considered full preparation as for a major anæsthetic was essential. He had noticed reference in American literature to abscess of the lung following operations for tonsils and adenoids, which might be ascribed either to dropping a piece of tissue down the larynx or perhaps merely to the expression of septic fluids from the tonsil at the moment of removal. He personally had never experienced this sequela, but would be glad to know whether any of the members of the Society had heard of such cases.

The **PRESIDENT** said that as regards the point between heroin and morphia, he did think heroin produced less after-effects. He had had, however, very good results with "Abbott's H.M.C." preparation of morphia, and desired to know whether other members considered this preparation had any special advantages. He thought that intrapharyngeal anæsthesia by the Shipway method, which he employed, was inadequate in many cases as compared with true intra-tracheal, as one missed the return flow of air. He had no special fear of carrying malignant disease into the lung by the catheter, unless the ulcer was very foul, and thought the gain was tremendous over a tracheotomy opening. He agreed that ethyl chloride was inadequate for tonsils and adenoids in adults, using open ether followed if necessary by the Shipway, by nasal tube. For longer dental cases he made extensive use of nasal gas with air. He admitted that the counsel of perfection was to give it with oxygen, but the question of the weight of the cylinders made nasal gas and oxygen hardly practical politics. Admittedly certain cases could not be handled by nasal gas, and he always had a Clover ready. For children under 12, even for dental cases, he found gas, certainly nasal gas, unsuitable, and preferred to rely upon ethyl chloride alone. He regarded 3 c.cm. as the outside dose for a child and with it had only had one serious fright; the child, however, recovered. If 3 c.cm. of ethyl chloride was insufficient he preferred to use closed ether.

Dr. **ROSS** referred to O'Malley's technique for nasal operations, particularly for submucous resection of the septum. Its essentials were the tilting of the head of the table to an angle of 45°, a pillow placed behind the head and neck just down to the upper portion of the shoulders producing a slight flexion of the neck; the use of Phillips's artificial airway to produce strict oral respiration and a combination of local anæsthesia by packing the nose beforehand and continuing with a very light chloroform anæsthesia. Having worked with O'Malley for a short period during the war, he had been struck with the smoothness of events if every one of these details was strictly adhered to. Another point in O'Malley's methods was the use of a very deep nitrous oxide anæsthesia for the enucleation of tonsils and adenoids, even in young strong adults. He agreed with Dr. Gibbs that it was better to produce a deep anæsthesia with gas or gas and oxygen in the first instance, and to use a small dose of ethyl chloride in the last few seconds of the anæsthesia only. He was inclined to think that Guy's original instructions for the anæsthesia were slightly defective in that not enough advantage was taken of the nitrous oxide element before adding the ethyl chloride. With regard to nasal methods, the addition of oxygen enormously simplified the actual administration, but the question of the bulk and weight of the apparatus was so important that he had been specially interested in listening to Dr. Fairlie's experience of nasal gas without special provision for oxygen.

Dr. **FREW** said that with regard to septic lung trouble after operation, he had had two personal experiences: one was a lung abscess following the extraction of very septic teeth—no solid foreign body was ever detected in the lung and the patient eventually recovered. In another case septic trouble followed a piece of bone inhaled during an operation upon the antrum; lung abscess followed, the bone was ultimately coughed up, and here also complete recovery followed.—Dr. **BARRAS** said that he used ethyl chloride extensively among children and did not consider that there was in its use any very material after-sickness.—Dr. **TORRANCE THOMSON** alluded to the impossibility of proving that the addition of ether increased the safety of ethyl chloride; how could you prove it if you had to wait for 30,000 cases before you got your first death after ethyl chloride alone? The further question arose, however, of whether it improved the anæsthesia in type and duration. There was a belief among some people that it did. With regard to tonsils and adenoids in adults, he described Rood's method of saturating the patient with ether given from the open mask much overlaid with towels and blankets. In Rood's own hands the results seemed to be excellent.

Dr. **GIBBS** replied generally to the discussion. He was of opinion that chloroform should not be given after adrenalin. With regard to the sickness after ethyl chloride, he believed that there was a good deal but that it often came on later when the patient had left the dentist's house. Even apart from sickness there was undoubtedly a good deal of malaise and feeling of depression. He therefore gave the smallest dose possible.

At the close of the meeting Dr. **TORRANCE THOMSON** demonstrated the Pinson bomb and the intra-tracheal apparatus devised for use with it. He also showed Mr. N. Dott's intra-tracheal apparatus.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

Early Active Movement in Relation to Fractures of the Upper Extremity.

A SPECIAL meeting of this Society was held on May 22nd, Dr. G. M. **DUNCAN**, the President, in the chair, when Mr. J. W. **DOWDEN** (Edinburgh) gave a lecture on this subject. After referring to the frequent occurrence of these fractures, the anxiety experienced by both practitioner and patient for a good result, and the possibility, always present, of an action against the practitioner for malpraxis in the event of a bad result, Mr. Dowden emphasised especially the importance of a method of treatment which would lead to early recovery of function—a point of the utmost importance to the wage-earning patient, the insurance societies, and in the long run to the State. The longer the limb was kept in absolute immobility—e.g., by splints—the longer would restoration of function take, as the repair had proceeded on restricted lines. Briefly expressed, Mr. Dowden's treatment consisted in first making an effort to get the bones into good alignment, putting the arm into a sling, and giving heroin for the first few nights. As soon as possible, preferably in 24 hours, active movement should be begun, and, later, passive movements carried out by the patient, all joints of the limb being moved, and the movements always stopping short of pain. The arm should be allowed out of the sling for frequent periods during the day. In certain cases a splint might be used at night. The treatment should always be directed towards a good functional result rather than a perfect anatomical result, the chief consideration being paid to the muscles and joints, not solely to the fractured bones. Consequently in children even marked bony deformity could be ignored, as in time superfluous bone tissue and callus would be absorbed and alignment of the limb restored. Mr. Dowden detailed the precise methods used in the individual fractures at the common sites of the upper limb, illustrating his methods and results by numerous lantern slides of radiograms and photographs of patients. He then summarised the points of his treatment, of which he had had over 20 years' experience; the great principle was active movement, and the chief advantages were its simplicity, economy, and rapidity and excellence of result.

An animated discussion followed, in which there took part Mr. Alex. Mitchell, Mr. W. Anderson, Mr. G. H. Colt, Mr. F. K. Smith, Dr. J. Smith (Peterhead), and Dr. J. E. Skinner (Skene). Questions were asked, and Mr. Dowden replied.

Reviews and Notices of Books.

GOITRE.

A Contribution to the Study of the Pathology and Treatment of the Diseases of the Thyroid Gland. By F. de Quervain, Professor of Clinical Surgery in the University of Berne. Translated from the French by J. Snowman, M.D., M.R.C.P. London: John Bale, Sons and Danielsson, Ltd. 1924. Pp. 247. 21*s.*

The genius of Kocher and the extraordinary incidence in Switzerland of enlargements of the thyroid have combined to give Berne a unique position in regard to the surgical treatment of goitre. The tradition has been carried on by Prof. de Quervain, whose name is already a household word in many fields of surgery and whose latest book is a masterly treatise on the subject. Characterised throughout by profound thought and wide scholarship, it teems with practical suggestions of real value.

One has to visit Berne to realise the gravity of the problem presented by goitre to the Swiss nation, but it is a sufficiently startling fact that of children of 16 in the schools of Berne 94 per cent. show some enlargement of the thyroid, whilst 15 per cent. have nodular goitres. Goitre in Switzerland is generally associated with a lowering of the thyroid secretion, resulting in extreme cases in cretinism. The cretin problem alone is a serious one for the country, for it means that a large number of the inhabitants must be cared for by the State, whilst every family is overshadowed by the possibility that an apparently healthy child may gradually reveal this terrible defect. In England the reverse is the case, thyroid enlargement being frequently associated with symptoms of secretory excess, and it has to be remembered throughout the book that in its author's experience only 5 per cent. of goitres were of this class. One of the most suggestive chapters is on the pathological physiology of the thyroid gland, and one cannot but be struck by the stress laid on the investigation of the metabolic rate as measured by the respiratory exchange. The relations between this, the histological structure, and the iodine content of the gland are presented in a very remarkable manner, and a clear outline is given of a problem of extreme complexity.

The diagnosis of goitre in its many varieties is elucidated by a splendid series of photographs and radiographs. As regards the latter, a most valuable point is made of the importance of an accurate study of tracheal compression, as regards site, direction, and degree. A glance at the tracings given should be enough to convince any surgeon of the reality of the danger to which the trachea may be exposed unless it has been previously located. In view of this it is somewhat remarkable that intra-tracheal anæsthesia has made so little headway in Switzerland and it is not even referred to by the author. Many surgeons in this country would regard it as the method of choice, both from its intrinsic safety and convenience and from the facility it gives to the operator. On the other hand, we in England make too little use of the advantages of local and regional anæsthesia, and there are few of us whose technique will not be benefited by a study of the methods described by the author. In the hands of Swiss surgeons these methods have provided the foundation of an exact and beautiful technique, remarkable for the absence of bleeding and the perfect exposure which it affords. But here again the contrast between the hypothyroidism of their patients and the frequent hyperthyroidism of our own has to be taken into account. On the technical side different methods and degrees of removal are fully described, and the difficulties and complications which may arise are considered. The author's method of ligating the inferior thyroid artery is of special value, and we have found by personal experience that it is safe, rapid, and easy. The whole question of ligating the arteries is well discussed, and precise directions are given for the avoidance of the parathyroids and the recurrent nerve.

The book is intended for those, both physicians and surgeons, who are specially interested in diseases of the thyroid gland. It presents in a small compass an immense amount of new and valuable information, gathered from the vast experience of the author. It is lucid and concise in expression, admirable in arrangement, and really well illustrated; whilst the translation by Dr. Snowman is so perfect that it is difficult to realise that it is not the author himself who speaks. To those of us who know the author there could be no higher praise. Prof. de Quervain has given us a book which will be read and re-read by all who are interested in the thyroid.

SURGICAL PATHOLOGY.

By Joseph McFarland, M.D., Sc.D., Professor of Pathology in the Medical Department of the University of Pennsylvania. London: H. K. Lewis and Co., Ltd. 1924. Pp. 701. £2 2*s.*

This book is written on somewhat novel lines. Unhampered by convention, the author has felt free to choose what subjects he would consider and what proportion of space he would assign to each. Inasmuch as Prof. McFarland has written for those beginning to specialise in surgery, his book will, no doubt, serve a useful purpose; but the choice and arrangement of the subjects dealt with make it doubtful whether it will be equally helpful to the ordinary medical student. There is, for example, no systematic consideration of inflammation, infection and immunity or surgical bacteriology, nor are these subjects dealt with really adequately in the section on special pathology. This is all the more surprising since the author defines surgical pathology as the bringing together and emphasising of those aspects of pathology which have been found to be of particular interest and importance to surgeons. Surely the diagnosis and treatment of processes of infection are of the utmost importance to the surgeon.

The book is divided into three parts. The first deals very fully with congenital conditions of surgical interest; the second treats of tumours; and in the third the pathological conditions of the various organs and tissues are discussed. In addition to the general index there is a bibliographic index, but since this is arranged in the alphabetical order of the authors' names rather than under subjects, its value is a good deal diminished; it will, however, serve to direct the attention of English readers to the literature of the United States and the Continent of Europe. The book is profusely illustrated and many of the illustrations are admirable; but others are equally bad, and it is to be regretted that some of the figures intended to elucidate the author's long description of the physiology and involution of the breast should be practically unintelligible.

While the surgical specialist will find much in Prof. McFarland's book of interest and value, it can hardly be recommended as a routine text-book for the less advanced student. Certain aspects of the subject are dealt with extremely well, but others of prime importance are omitted altogether or merely glanced at. And it is to be feared that the beginner who relied entirely upon Prof. McFarland's conception of what should constitute the surgeon's pathological equipment, would become conscious in the hour of trial of many gaps in his knowledge.

X RAY THERAPY.

Die Röntgenbehandlung des Uteruskarzinoms. By Dr. HERMANN WINTZ, O. Professor, Direktor der Universitäts-Frauenklinik, Erlangen. Leipzig: Georg Thieme. 1924. Pp. 30, plus 50 unnumbered pages of illustrations. £1 4*s*.

APPARENTLY a desire had frequently been expressed by those visiting the Erlangen Klinik for a description of the exact technique used in the treatment of carcinoma of the uterus. This book is the result. It does not describe in detail the apparatus used or the dosage given, as these have been gone into more fully elsewhere. It briefly refers to the preparation of the patient for treatment with the technical details of this preparation. Next, the copper electrolysis of the growth is described as an essential part of the treatment. Many, of course, will doubt its value. The book then comes to the part of the subject with which it is mainly concerned—viz., focusing the tube on the growth with all the attendant factors. This last part is illustrated by 50 clear and helpful plates, which leave little to be desired. In fact, these plates form the chief feature of the book, as they occupy more than half of its space. Finally, the after-treatment of the patient is described.

The author has written the book in the hope that it will help others to base a sound technique of their own, feeling there will be variations made by every practitioner to suit his needs. It certainly is a clear and simple description of the Erlangen technique for the treatment of carcinoma of the uterus, so far the most successful field of intensive therapy. It will help those who desire to know the Wintz exact method and can read German. The pictures might even help those who cannot.

Röntgentherapie, Oberflächen- und Tiefenbestrahlung. Sixth edition. By Dr. H. E. SCHMIDT. Rewritten and enlarged by Dr. A. HESSMAN, Dirigierender Arzt der Röntgenabteilung des Krankenhauses am Urban, Berlin. Berlin: August Hirschwald. 1923. Pp. 280. $1.95.

THIS type of text-book of X ray treatment seems to be turned out in considerable numbers in Central Europe. It contains a physical part which is competently written; it then goes on without inspiration, but with care to describe the technique of superficial and deep X ray treatment. This, of course, has all been done before somewhere else, not better perhaps, but often as well. Chapters are put in which deal with the problems of the day such as "Die Hygiene im Röntgenzimmer," in which the illuminating information that the room must have bright walls and not be darkened is given. It is all true and perhaps necessary. Then comes an astonishingly long list of all the diseases which can be more or less successfully treated by X rays. It is, perhaps, as well not to quote some as each disease no doubt has its X ray advocate, but the list taken altogether shows either great powers or great faith. The book is a sound one, helpful to the student of X ray treatment. It gives him a good foundation on which to work and useful practice in reading German.

INFECTION, IMMUNITY, AND BIOLOGIC THERAPY.

With special reference to Immunologic Technique. A Practical Text-book. Third edition. By JOHN A. KOLMER, M.D., Dr. P.H., D.Sc. (Hon.), Professor of Pathology and Bacteriology in the Graduate School of Medicine, University of Pennsylvania. With an introduction by ALLEN J. SMITH, M.D., Sc.D., LL.D., Professor of Pathology in the School of Medicine of the University of Pennsylvania. London and Philadelphia: W. B. Saunders Company. 1923. Pp. 1210. 60*s*.

To call this book monumental would be to do less than justice to the author; for the term connotes finality and immutability—the last of the attributes that Prof. Kolmer would claim for his work or that its admirers would wish to see in it. Enduring as brass, however, it undoubtedly will be; one might even prophesy that a century from now, along with "Gray" and other medical classics, it will still be running into new editions. It would be unprofitable to speculate as to how much of the present matter will still find place in those future editions, but if unremitting and assiduous toil is to find its due acknowledgment, the name of Prof. Kolmer will still figure upon the title page.

The book is so well known to all practical pathologists and bacteriologists, that once the fact that a new edition has appeared and that it fully comes up to the standard of all its predecessors has been noted, little remains to be said. As in previous editions, the author has taken the greatest pains to bring his matter up to date almost to the hour of the final impression. Much that is new since the appearance of the last edition six years ago has been added; the additions are interesting as indicative of the advance made during those years in the theory of immunity and in its practical application. It must be admitted that the great movement initiated by the work of Bordet, Ehrlich, and others does not now advance so rapidly as of old, although it can hardly be said to have lost its force. The principal applications of immunologic therapy in which notable advance has been made since the last edition are the Schick reaction for diphtheria with the toxin-antitoxin method of immunisation of Behring, the technique for the transfusion of blood, the recognition of the existence and significance of the blood groups, and the diagnosis and treatment of the allergic conditions. Of these, the Schick reaction marks a real advance in preventive medicine; this subject is well discussed, and full details are given for the performance of all the necessary procedures. Here, as in all other sections of the book, Prof. Kolmer has not allowed his enthusiasm to run away with him, and clearly points out the dangers inherent in the immunisation process—dangers which can readily be avoided with proper care, but which are none the less very real. In the section on blood transfusion full directions are given both as to the indications for transfusion, the choice of method, and the selection of donors. Sir Almroth Wright's method of immuno-transfusion finds place in this section. In the chapter on isohæmagglutination, though bulk for bulk the work on this subject done in America vastly outweighs that done in this country, it is pleasant to observe that Prof. Kolmer has accorded full recognition to the observations of English writers. Chapters XXIX.–XXXII. are devoted to the clinical allergies, and here again the author maintains an attitude of commendable discretion. In Chapter XXXIX., the principles, such as they are, of non-specific protein therapy are fully dealt with, and there appears to be hardly a use to which this peculiar form of medication has been applied and recorded which has escaped the author's notice. As to the matter included, the author might with advantage have been rather more drastic; a certain number of observations which have been discredited since the last edition still find a place in his pages, and do not help the general flow of the argument; a notable example of this occurs on p. 154. Vaughan's theory of the fermentative nature of the processes of immunity is hardly worthy of such lengthy treatment; the same applies to the schematic representation of the same processes elaborated by Ehrlich; in the light of present knowledge—or lack of it—the time would seem to have arrived when the intriguing pictures of test-tubes full of oddly shaped objects labelled "amboceptor" and so forth might be eliminated from pathological works. However, in face of the immense amount of work, good, bad, and indifferent, incessantly proceeding in all parts of the world, the problem of selection in works such as this must be of extraordinary difficulty.

The book is profusely and intelligently illustrated, and the illustrations, without being works of art, are well suited to fulfil the object for which they are designed. The references are numerous and useful.

SEXUAL LIFE.

The Sexual Life of Man. By Dr. PLACZEK. Translation revised by Dr. W. C. RIVERS. London: John Bale, Sons and Danielsson, Ltd. 1923. Pp. 233. 10*s.* 6*d.*

THIS work is intended to furnish an outline of our scientific knowledge of the sexual life of man for students, doctors, and lawyers, and was originally written by Dr. Placzek, a Berlin neurologist, on account of the difficulty experienced by students in obtaining the larger and better known text-books, which have in many cases gone out of print.

The book starts with a preliminary account of the anatomy and physiology of the sex organs, male and female, and with an outline of the normal history of sex from childhood to old age. This is followed by chapters dealing with genital gland deficiency, the results of castration, and the reciprocal action of the gonads to the other glands of internal secretion. The second half of the book deals with aberrations of the sexual impulse, the various forms of perversion and abnormal sexual impulses being briefly described and catalogued. Although we cannot go so far as Stekel that "In erotic matters there are no normal men," anomalies of the sexual impulse are so commonly met with that it is certainly necessary for every practitioner and lawyer to have some knowledge of this subject, and to those requiring a concise account of the commoner abnormalities Dr. Placzek's book will be useful. Indeed, in the English language there are few other works (with the notable exception of the classical works of Havelock Ellis) to which the student can resort for information, the subject not being one that appeals to English authors or publishers. While this book should therefore be of considerable use in this country, it contains many statements which are open to criticism. We consider the author's references to the work of Freud and of Jung unnecessarily scathing. It is true that fanatics of these creeds are commonly met with, but it is equally true that both Jung and Freud have made valuable contributions to our knowledge of the sexual life. Again, in the latter part of the work we find a reference to treatment by means of transplantation of human testicle. For this purpose cryptorchid testicles are recommended partly on the grounds that they are rich in interstitial cells, and partly because having no reproductive function they cannot transmit hereditary qualities! This, of course, implies that the transplanted testicle can function with respect both to internal and external secretion, and is an error of a very elementary nature. However, in spite of these deficiencies the book will be of use to those requiring a concise and at the same time comprehensive survey of the subject of the sexual life of man.

Sexuological Essays. By W. C. RIVERS, M.R.C.S., L.R.C.P., D.P.H. Leipzig: Curt Kabitzsch. 1924. Pp. 168. 7*s.* 6*d.* (Circulation limited to Medical Practitioners.)

IN this book Dr. Rivers shows his boldness when he announces that, for obvious reasons, he failed to find a publisher in England or America. He shows how various present-day movements, that for the prevention of venereal disease, for example, justify the study of sex on the ground of practical needs, but that there is still a strong opposition which denies to science the right to investigate it. After a chapter giving an outline of the sex instinct and its common anomalies, Dr. Rivers goes on to such varied subjects as kissing and its related actions, the homosexuality of Walt Whitman, masculine affection for cats, and the result of race miscegenation. The chapter on "medical women in the future" is anti-feminist, and he gives the impression of finding always the evidence he would like, as, for instance, when he says (p. 64) that particularly few women qualify in the minimum time because their health is not so constant as that of men. The book is stimulating, and the author is sure to meet with strong disapproval, for which he seems to be prepared.

MEDICAL AND VETERINARY ENTOMOLOGY.

Second edition. By WILLIAM B. HERMS, Professor of Pathology in the University of California; Consulting Entomologist for the California State Board of Health. New York: The Macmillan Company. 1923. Pp. 462. 28*s.*

THIS book is intended as a text-book for use in schools and colleges as well as a handbook for physicians, veterinarians, and public health officials—ambitious objects involving a uniformly high standard of work. The author's treatment of the various branches of entomology, especially where it affects man, is, however, unequal, while veterinary entomology is described in a palpably inadequate manner. The economic annual loss to the United States caused by insects is estimated by the Department of Agriculture at 800 million dollars and the vital loss at 348 millions, whereas it is solely with the latter aspect that this volume deals. The introductory portion, the little sallies into helminthology and protozoology, are excellent in so far as they constitute a historical record, but here the serious student of tropical medicine will find statements which are not generally accepted: as, for instance, Adie's account of the development of leishmania in the bed-bug (p. 7). The various families of insects are not described in detail. We note that the terms definitive and intermediate host, though correctly defined, are not strictly adhered to throughout the book. The unequal treatment of the various parasitic genera calls for some comment. The house-fly and its habits are treated at very great length, while a description of the important genus *Glossina* is crowded into less than half a page. Such popular terms as "roaches" for cockroaches, and "wrigglers" for mosquito larvæ would seem out of place in a scientific work.

We have nothing but praise for the chapter on parasites and parasitism; the definition of the various terms employed and the correlation of comparative protozoology, helminthology, and entomology are too seldom attempted in books of this description. If only for this chapter the book is well worth having.

LOVE IN CHILDREN AND ITS ABERRATIONS.

A Book for Parents and Teachers. By **OSKAR PFISTER**, Pastor in Zurich. Translated from the German by **EDEN** and **CEDAR PAUL**. London: Allen and Unwin. 1924. Pp. 572. 24*s*.

Pfister writes this book for the lay public, and the reader acquainted with his previous works will find himself covering a good deal of familiar ground. The author opens with an historical survey showing how love was treated as an important factor in human relations till the advent of scientific psychology, the attitude of which he illustrates by the observation that in the chief works of Wundt, the most highly respected psychologist of our day, there is not a word about love. To this attitude he ascribes it that scholasticism has "provided nothing of value for pedagogy, psychiatry, criminology, or the conduct of life." In his own studies he claims to restrict himself to the data of personal observation, and justifies his claim in so far as he freely provides histories of actual cases, treated by analysis, which supply a foundation for deductions and generalisations. One is nevertheless occasionally tripped up by such phrases as "it is obvious that" when the deduction is anything but obvious to the non-analytical reader. The book indicates the operation of family influences in producing neurotic disturbances and abnormalities through their effect upon the love impulse, and the application of psycho-analysis in unravelling the factors concerned. Most of his conclusions are derived from the analysis of adolescents and adults, and for an account of a child analysis Pfister falls back upon Hug-Hellmuth, whose description (p. 536) makes the analysis a trivial and unconvincing affair.

Notwithstanding a tendency to exhortation and the indifferent English that occasionally appears ("goods" as the plural of the abstract noun, for example), the book must be placed among the serious works on the subject. It conveys a large amount of important information of a kind not found in usual writings on child-life and development.

JOURNALS.

QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE.—The current part of this journal contains six memoirs dealing with various topics, including both vertebrate and invertebrate anatomy and histology. Prof. Brontë Gatenby leads off with an account of the Transition of Peritoneal Cells into Germ Cells in Gallus Bankiva, which is illustrated by one coloured plate and two process blocks in the text. The author shows that sexual cells are formed de novo, as was originally believed to be the case, from the peritoneal epithelium and not handed down from original germ cells segregated at the first division of the ovum. Both ways of formation of ova and testicular cells are to be met with in the animal kingdom, though present views on the continuity of the germ-plasm would seem to argue the original segregation as the older way. Dr. Gatenby, however, is convinced, and quotes facts due to the investigations of others as well as those discovered by himself in support of the twofold mode of origin.—In another paper Dr. Bahl continues his investigations into the nephridial system of earthworms. It should be pointed out, however, that although this naturalist has added a great deal to what is known upon this matter, he did not "discover" the existence of nephridia in the oligochæta which open into the enteron. This was found more than 30 years ago, and is recorded in Vol. XXXIII. of the journal under review.—A second memoir upon an oligochæte worm is also from the pen of a native of Hindustan, and deals with the development of the generative system of the aquatic worm Stylaria.—Other contributions include two by Mr. de Beer in the development of the head in heterodontus, and one on the skin of mammals, by Mr. Shapiro.

The Conduct of Medical Practice.

A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.

XVII.—EQUAL PAY FOR EQUAL WORK.

BY FLORENCE E. BARRETT, M.D., M.S. LOND.,
PRESIDENT OF THE MEDICAL WOMEN'S FEDERATION.

ONE feature of the modern development in preventive medicine is the increasing number of full-time posts with definite salaries offered to qualified medical men and women. At the same time there has grown up within the medical profession a more or less pronounced professional trade unionism, which probably had its birth consciously or unconsciously in memories of the undignified position endured by doctors under the old club system, and in the fear that unless the medical profession itself fixed an adequate scale of salaries, which its members should honourably uphold, public bodies would whittle down remuneration to the minimum which would still attract applicants.

A High Standard for the Public Health Service.

The medical profession as a whole have agreed that £500 a year is the minimum that should be paid for whole-time work by a fully qualified man or woman. In the public health service a higher minimum has been fixed, coupled with a recommendation that no one should be appointed to these important posts who has not done at least three years post-graduate work of a kind which would qualify the candidate to fulfil adequately duties which have so potent an influence in preventive medicine. There is still some confusion in the minds of professional men and women with regard to the two different minima. It is not very long since £500 a year was fixed with the approval of the profession as being adequate pay for full-time appointments, and the more recent pronouncement that £600 a year should be the minimum accepted for public health posts is still unknown to many, while the reason for the different standard is obscure to others.

To the general public—including some who are holding positions on public bodies—the higher scale claimed in the public health services is merely an attempt of one branch of the profession to obtain higher salaries: they have not begun to realise that in the interests of the whole community it is wise to ensure that experienced people only should be appointed to these posts. This lack of understanding will only be remedied if all public health authorities responsible for appointments are induced to make it quite clear in their advertisements that application will only be accepted from candidates who have fulfilled the condition of at least three years' suitable post-graduate work. Only in this way, too, will the younger members of the profession learn that it is in the interests of the nation as a whole that responsible posts should be the reward of experience gained, and therefore that the remuneration is justifiably fixed at a rate which to some of the newly qualified seems unnecessarily high.

Partly arising from the failure of public bodies to advertise for graduates of three years' standing, and partly from the fact that just now the numbers of medical students of both sexes which filled our medical schools at the end of the war are qualifying and adding to the names on the Medical Register with unusual rapidity, a crisis is arising in the profession which is very serious for its future, and which will strain to the utmost the patience and loyalty of both men and women if it is to be successfully dealt with.

Sex-limited Advertisements.

The first attempt on the part of those responsible for public health offices to avoid the higher scale of salary has been to issue advertisements without conditions of experience for medical women at £500. Many women applied for these or asked for particulars in complete ignorance of the fact that £500 a year was not recognised by the profession as an adequate salary. To all whose names were known, the Medical Women's Federation wrote acquainting them with the facts, and numbers of women to whom a post at £500 a year would have been a coveted prize did not apply, an act of self-sacrifice which all will recognise. Some had accepted posts* before knowing that it was below the professional standard, and had involved themselves in financial responsibility. In this way the present crisis has arisen which, put quite plainly, is an attempt to offer a lower scale of salaries to women in the profession than is offered to men for the same work.

The unfairness of such an offer is unnecessary to dwell upon in a medical journal. All know that the course of training, the diplomas taken, and the work done in public health appointments is the same for women as for men, and therefore any attempt to pay them less is a serious injustice. What we all have to recognise, however, is that it is impossible to lower the standard of pay given or the experience demanded from any one group in the profession without creating profound changes of one kind or another. There is no doubt that women will do the work as well as their male colleagues, and if women accept lower salaries the authorities will be quick to recognise that, by employing women, they can obtain as good an officer with economy of expenditure. The immediate result will be that all other local authorities will follow suit, and women will obtain the majority of the posts. The other alternative result would be that men would also accept posts at the lower standard—the facts suggest that they are as likely to succumb to the difficulties of their circumstances as women—and any attempt of the profession to fix its own standard, either for men or women, would be frustrated.

What there is at Stake.

There is, therefore, at the present time a need for the utmost loyalty from every member of the profession, because what is at stake is not merely a question of money, but the right of the medical profession, who are trained in matters which pertain to the health of the community, to advise as to the experience necessary in health officers, and the salary which can reasonably be expected to attract the right people. At first sight it may appear that the only question involved is the loyalty of women, and that their duty is simply to refuse posts in the public health service at less than £600 a year. But if under such pressure of refusal public authorities are obliged to raise the salary, and the same post under the more favourable conditions is then thrown open to men only, are men to feel free to supplant the women whose loyalty has won the battle in that particular instance? Again, should medical men feel justified in working under a public authority which openly announces its intention to pay medical women at a lower scale than medical men for the same work?

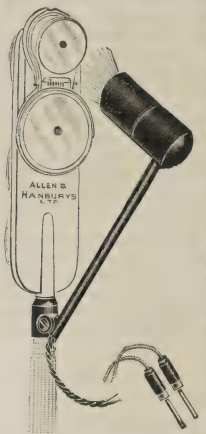
In fact, the question before the profession is, Are medical men and women to be mutually loyal in this crisis to the decisions of the profession as a whole, or is loyalty to be only on the side of the group chosen for attack? This question needs serious thought from all, because it must frankly be acknowledged that women cannot win this battle alone. If the posts they refuse can be immediately filled by men, their resistance will clearly mean the gradual exclusion of women from the public health service. Without the assistance of their men colleagues women would be obliged to give in, and we should probably find that some individuals will accept posts they desire for the sake of the experience it gives, and because they know that in certain branches of the public health services women are specially needed.

There is no doubt, however, that with the loyal assistance of the profession as a whole, individual women would be prepared in the future to sacrifice personal gain as they have done so often in the past, and thereby to retain for the profession the right to advise as to the conditions of service which should be offered in order to secure experienced doctors in posts where experience is necessary for the public weal. The Medical Women's Federation, which includes 900 women in practice, and many hundreds of associate students, is still unanimous in believing that equal pay for equal work should remain the standard in the profession, as it has always been in the past.

It is possible, however, that all men at the moment do not realise how vital a blow will be struck at the prestige and influence of the whole profession if this standard is not maintained.

New Inventions.

OPHTHALMOSCOPE ATTACHMENT.

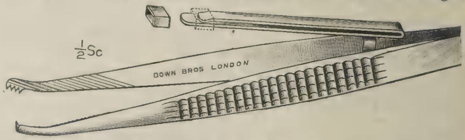


OWING to the difficulty which many students and practitioners experience in performing ophthalmoscopic examination by the direct method with a Morton's ophthalmoscope, and owing to the expense entailed by the purchase of an electric instrument, we have devised (see figure) a simple attachment for the ordinary ophthalmoscope, by means of which it is possible to obtain the advantage of the electrical instrument at a comparatively small cost. The apparatus consists of a collar and an adjustable arm with a lamp-holder, which is fitted to the ophthalmoscope at the junction of the handle and the body. The electrical part is of the simplest, being merely a pocket battery, flexible wire, and a flash-lamp bulb. At a slight additional cost a variable resistance may be obtained. Messrs. Allen and Hanburys, Ltd., Wigmore-street, London, W., are the makers of the instrument.

W. O. C. JARRATT, M.R.C.S. Eng.
LEONARD P. LOCKHART, M.B., B.Ch. Camb.

A NEW MAGAZINE FOR MICHEL'S CLIPS.

THIS instrument, which is a combination of Childe's forceps with a fixed magazine, has proved very satisfactory in use. Its main advantage is that by virtue of the special serrations at the end of Childe's forceps it is quite easy to secure eversion of the skin edges and maintain it whilst introducing the clips. An additional advantage is that it is so constructed that the magazine when in use lies parallel with the skin and the clips are drawn off from the lower end instead of the upper as in Bonney's instrument, a fact which brings the clips closer to the wound and makes for more rapid application. A special metal cap is also provided, which fits over the end of the magazine and prevents the clips from slipping off during sterilisation or while being carried in the surgeon's bag. I feel sure that those surgeons who use Michel's clips will find this magazine a useful addition to their surgical equipment. The instrument is made by Messrs. Down Bros., St. Thomas's-street, London, S.E.



Birmingham. BERNARD WARD, F.R.C.S.

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* It is only fair to say that although some advertisements for junior whole-time appointments asked for women only, the numbers of men and of women respectively who have *accepted* underpaid posts are about equal.

THE LANCET.

LONDON: SATURDAY, JUNE 21, 1924.

HOSPITAL SUNDAY.

THE annual collection for the Metropolitan Hospital Sunday Fund will take place next Sunday, June 22nd, and it is not necessary to press the urgency of the appeal upon our readers. They are all fully aware of the conditions of debt and mendicancy under which many of our splendid voluntary institutions are compelled to carry on their work, and the general public know well that the situation is often a terribly anxious one. The fear is lest the appeal of the Fund should have become over-familiar. No more mis-used text was ever written than "Ye have the poor always with you," so easily can it be dislocated from its context and applied as a defence for inaction.

The methods which the hospitals most usually employ to obtain the support necessary for their conduct have become stereotyped, and though the totals of the annual collections give no reason to think as yet that these methods have lost their influence, still it is well that they should be reinforced by the support that comes from large consideration of hospital questions by representative citizens. There is now much opportunity for the general public to become alive to the real position of our voluntary hospitals, and also to appreciate the thoughtful and vigorous manner in which it is being dealt with. The Voluntary Hospitals Commission have just held a conference at which full facilities were given for reporting the proceedings; and this meeting was itself consecutive to a largely attended conference of medical, labour, and kindred organisations which met less than two months ago at Caxton Hall, Westminster. At this meeting general questions of hospital administration and control were fully discussed,[1] with the result that the Minister of Health asked the Voluntary Hospitals Commission to report to him upon the whole matter of additional hospital voluntary accommodation required in England and Wales and on the best means of providing and maintaining it. The discussion in the conference chamber of the Ministry of Health will show to all how vital to the national interests a sound provision of hospitals has now and admittedly become. And as we go to press the fourteenth annual conference of the British Hospitals Association is being held in Victory House, Leicester-square, under the presidency of Sir ARTHUR STANLEY. The relations of the voluntary hospitals to municipal authorities and to approved societies form the essential programme of this meeting, so that the important place in the whole of society occupied by the institutions will become apparent. Thus the functions at the close of this week form a fitting prelude to Hospital Sunday, for the real conditions under which financial stress and shortage of beds are endured will become clear to the public from the experience of different authorities, who will be able to make the statements of business men, and to appeal for hospital support on grounds of hard reason.

Not a word will be uttered which cannot be considered an argument for a generous response to the Hospital Fund. The subscription list of the Hospital Sunday Fund makes its more particular appeal to the ordinary householder, and neither he nor the members of his household are likely to forget the high prices of things necessary to daily life, the weight of taxation, and the depressing difficulty of making both ends meet. But if the Fund, through the stress of the times, loses old friends it should gain new ones on whose ears perhaps the arguments of scientific sociology may fall with a clearer message than any references to altruistic sentiment. Yet the grand message must remain that those who have should help those who have not. And still the plight of the suffering sick will draw response from the more fortunate. There is reason to hope that the Hospital Sunday Fund for 1924 will show a great return. The appeal is being made to a public which is becoming really informed.

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[1] See THE LANCET, May 3rd, p. 923 et seq.

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NEW WORK ON THE ÆTIOLOGY OF SCARLET FEVER.

RECENT work in America encourages the hope that the cloud of uncertainty which has so long enveloped the ætiology of scarlet fever is at last to be lifted, and that not only has the causative micro-organism been identified, but that we shall soon be in possession of effective means for the treatment and control of the disease. Last autumn Drs. GEORGE and GLADYS DICK [1] reported that they had been able to communicate the infection to a human subject by swabbing the throat with a culture of a hæmolytic streptococcus obtained from scarlet fever patients. In January they announced that they had succeeded in producing scarlet fever in another volunteer, on this occasion employing a different strain of the same micro-organism. As a control for this experiment they selected an individual who, having given a negative skin test, was presumably not susceptible, and this subject failed to develop the fever. The skin test employed, consisting of the intra-cutaneous introduction of 0·1 c.cm. of a diluted filtrate of the hæmolytic streptococcus and already known as the "Dick test," appears, like the analogous Schick reaction in diphtheria, to be positive only in susceptible persons.

In the investigation of their eponymous reaction Drs. GEORGE and GLADYS DICK [2] found that it was absent in 62 out of 65 scarlet fever convalescents, and also negative in 15 out of 16 individuals who had suffered from scarlet fever at some previous date, whereas 41 per cent. of persons who gave no history of having had the disease were positive reactors. These results have been confirmed by C. F. BRANCH and F. GILL EDWARDS,[3] who report that all the convalescent patients whom they tested, 65 in number, gave negative reactions, that three patients acutely ill with scarlet fever gave slightly positive results and became negative in convalescence, and that 40 per cent. of individuals with no history of scarlet fever, a percentage practically identical with that of the DICKS, were positive. Control tests with heated filtrate were consistently negative, and they conclude that the Dick test apparently has a specific relationship to immunity to scarlet fever. A similar view is expressed by A. ZINGHER,[4] who has made a very complete investigation of the reaction, and finds the susceptibility by age-groups from birth to adult life corresponds closely to the percentage susceptibility to diphtheria as shown by the Schick test. This observer also noted positive reactions in the acute stage of the fever in all but three of nearly 100 cases examined, the patients giving negative results as they progressed into convalescence. Immunisation experiments with the streptococcus toxin have also been carried out by the Dicks[5] and by Zingher. Susceptibles when injected with suitable quantities of the filtrate may develop a scarlet fever rash with nausea, vomiting, and pyrexia of 48 hours' duration. After subsidence of these symptoms the skin test is found negative or slight. The effects appear to be produced rather by a soluble toxin than by a filtrable virus, as the incubation period is less than that of experimental scarlet fever, and, moreover, the filtrate shows resistance to a temperature which is sufficient to kill bacteria.

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[1] Jour. A.M.A., Oct. 6th, 1923.
[2] Ibid., Jan. 26th, 1924.
[3] Ibid., April 19th, 1924.
[4] Proceedings of the Society for Experimental Biology and Medicine, 1924, xxi., pp. 293–298.

The Dicks[5] now report that they have succeeded in obtaining a specific antitoxin. They have immunised a horse by subcutaneous injections of sterile filtrate from broth cultures of the strains of streptococci that had produced experimental scarlet fever. The serum of the animal was first tested by being mixed with various dilutions of toxin, and it was found to be incapable of neutralising even weak dilutions. After increasing doses of toxin, up to 250 c.cm., had been administered, the horse's serum neutralised strong dilutions of toxin. This antitoxin was not destroyed or lost in the process of concentration. The authors conclude that its therapeutic value can only be determined when the results of its use in a large number of carefully controlled cases are available, and it is to be hoped that no time will be lost in submitting the antitoxin to such a trial. Notwithstanding the work of Klein, Mervyn Gordon, and others, many competent authorities have been inclined to regard the streptococcus more as a secondary invader, responsible merely for the septic manifestations of the disease, than as the causative micro-organism itself. In the light of these researches it looks as if such a view of the question requires revision. A very strong case has been made out for the hæmolytic streptococcus of the Dicks, and it is difficult, with the analogy of diphtheria before us, to question the specificity of a toxin which gives such results as have been mentioned above. Now that an antitoxin has been produced the employment of toxin-antitoxin mixtures bids fair to be a success, but it is obvious that time is required before we can have any real assurance that the control and treatment of scarlet fever will be on the same level as that of diphtheria. It may be added that the research was made possible by a large donation from Mr. Harold McCormick, of Chicago, who had lost a child from scarlet fever.

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THE DIAGNOSIS OF TUBERCULOSIS IN PENSIONERS.

A striking and noteworthy outcome of the campaign against tuberculosis in this country is the recognition of the fact that diagnosis is often a problem of great difficulty, involving, in some cases, skilled observation of the patient over a matter of days or weeks along with expert consideration and appraisal of clinical, pathological, and radiological data. This is now officially recognised by the tuberculosis and pensions authorities. It is important that it should be more widely appreciated by the public generally, since too frequently patients and their friends expect from a single clinical examination a definite opinion as to diagnosis, prognosis, and treatment. The complexity of the problems involved is admirably illustrated by the interesting paper, published in our issue of last week, by Dr. Alexander Sandison and Dr. Basil Price, of the Ministry of Pensions. At the outset they point out the special importance of accurate diagnosis from the point of view of the pensions authorities, especially in relation to their decision on the question of entitlement to pension. It is obviously of importance that this should be arrived at with full justice to the man claiming, but without detriment to the State. As long ago as 1920 the Ministry arranged for 100 cases, taken at random, of men pensioned for tuberculosis to be subjected to a comprehensive expert examination. It was found that about one-third were wrongly diagnosed as tuberculosis. In consequence of this, special arrangements were made for the observation and investigation of doubtful cases of tuberculosis amongst pensioners. The period of observation is limited to 28 days, but the average time taken is three weeks.

The observations recorded in this paper were made by Dr. Price upon pensioners in the London region admitted to the special observation beds at the Ministry of Pensions Hospital at Orpington, where 80 or more beds are available for the purpose, with special facilities for laboratory and X ray investigations. He bases his conclusions on 500 cases, of which 243 were regarded as pulmonary tuberculosis with "entitlement" for that condition. Only 37 of the 500 had records of tubercle bacilli having been found, and in only 8 of these were tubercle bacilli actually found while under observation. They were found in 13 of the remaining 206 cases, in which the diagnosis had previously been made on clinical grounds only. The results of the investigation demonstrated that in 9 per cent. of the 243 cases tubercle bacilli were present in the sputum or other secretions, 6 per cent. gave other evidence of activity. 50 per cent. presented quiescent or arrested lesions, while 33 per cent. gave no clear evidence of present or past tuberculosis. It will be noted that the percentage of wrong diagnoses is strikingly in agreement with that in the original 100 cases investigated in 1920. These figures would seem to indicate the need for similar careful observation of cases under suspicion of pulmonary tuberculosis in civilian practice, for there is no reason to suppose that the percentage of error is less in such patients than in the pensioners. The importance of this is indeed recognised by most of the tuberculosis authorities, who provide beds for special observation in chest hospitals and other institutions. It is also of importance in the well-to-do who do not come under the ægis of the official schemes, and it serves to emphasise the necessity for providing more general opportunities for study of tuberculosis in connexion with the medical schools, especially those not having a tuberculosis dispensary affiliated to them. It must be remembered that it is still the general practitioner in the majority of cases who first comes in contact with the patient and upon whom the responsibility of suspecting the disease in the first instance devolves. It is therefore necessary that adequate instruction for both undergraduate and post-graduate students should be provided, as well as means for special investigation of doubtful cases.

In the analysis of the 500 cases passed under observation, Dr. Price refers to the influence of syphilis, gassing, and gunshot wounds of the chest in regard to the incidence of tuberculosis, but no striking or noteworthy facts emerge. On the other hand, his observations on the relative value of clinical, pathological, and radiological evidence in the investigation of suspected tuberculosis are interesting and suggestive. He allows that the complement-fixation test does not yet approach in value the Wassermann reaction in syphilis, though he claims that it may be helpful. He finds that a strong positive reaction suggests a tuberculous infection, but that its degree is not necessarily proportional to the clinical condition or to the activity of the disease. It may also be positive in non-tuberculous conditions, and the presence of a positive Wassermann reaction much impairs any deductions from a positive complement-fixation test unless the latter is of higher value than the Wassermann. Pirquet reactions were usually carried out, but gave no consistent results in regard to the complement-fixation tests; indeed, the observations were often mutually contradictory. Other tuberculin reactions were not employed owing to the possible risk of activating arrested or quiescent lesions. The examination of the sputum for albumin proved not to afford any help in diagnosis either as to the presence of the disease or to the activity when present. In regard to the value of radiographic reports, it is interesting to find that in 127 cases the X ray findings tended to corroborate the positive clinical evidence, while in 66 cases, in which on clinical grounds tuberculosis was diagnosed, the radiographic findings were negative. On the basis of these figures Dr. PRICE urges that the negative results of X ray examination must not be allowed to overweigh the diagnosis made on clinical grounds. He sums up his views on the relative values of clinical, pathological, and radiographic observations in diagnosis by maintaining that apart from the finding of tubercle bacilli the chief reliance must be placed on clinical evidence, a perspective with which most observers who are concerned in the diagnosis of pulmonary tuberculosis will agree. This conclusion serves further to emphasise the importance of the clinical study of this disease by students and practitioners.

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[5] Jour. A.M.A., Feb. 16th, 1924.

NON-POTABLE SPIRIT.

IN accordance with the announcement in the Budget Statement, methylated spirit sold to the general public for domestic purposes has, since May 1st, contained an addition of crude pyridine in order to make it less acceptable as a beverage. The new mineralised spirit will contain, to be exact, crude pyridine 0·5 per cent., wood naphtha 9·5 per cent., mineral naphtha or paraffin oil 0·375 per cent., and methyl violet a trace. The Chancellor was advised that this spirit would be so nauseous and so difficult to swallow as to give pause to the would-be drinker, and if his reluctance were overcome, the draught would make the victim so ill (but not mortally) that he would be unlikely to attempt to defraud the Revenue by continuing to drink it. We learn from the *Chemist and Druggist* that it had been the practice by those who wished to drink the old methylated spirit to remove the petroleum by diluting and shaking the spirit with salt or charcoal. Our contemporary suggests that there is a simple method of separating the pyridine from the new spirit, and it remains to be seen whether the public will find this out or not. Major F. J. W. Porter, writing to us from the Surgical Nursing Home in Bombay, recommends the addition of one half per cent. each of caoutchoucine and pyridine for the denaturing of spirit for surgical purposes. Every surgeon, he says, knows that it is impossible to use tincture of iodine made from methylated spirit denatured by the British Customs, whereas that prepared by the Indian Customs in the way suggested can be used for such a purpose. He can see no reason why the British Excise authorities should not allow hospital spirit to be prepared in this manner, seeing that it is absolutely undrinkable even by Indian fishermen.

Annotations.

"Ne quid nimis."

LOCAL ANÆSTHESIA.

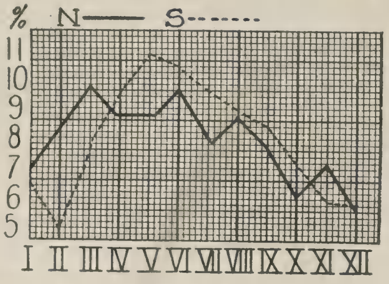
THERE is still a certain amount of rivalry between local and general methods of analgesia in the sense that one or other is more in favour in the practice of most surgical clinics, and a perspective can be obtained only by observing the practice at a number of centres. So much depends upon adequate technique and assistance, and where the arrangements are adapted for the one method things run so smoothly as to limit the demand for the other. Particularly is this the case where an abundant supply is available of highly-trained assistants in general anæsthesia. The growing experience and popularity of local anæsthesia is evident on perusal of the second abstract-review of this subject contained in the June issue of the *Prescriber* (Edinburgh), whose editor, Mr. Thomas Stephenson, D.Sc., F.R.S. Edin., has long made it a practice of collecting and collating information on the borderland of medicine and pharmacy. Attention is called in this review to the unrivalled position still occupied by cocaine by reason of the intensity and persistence of its local anæsthetic action. Novocaine appears to be destroyed by contact with the tissues, and of the series of allied preparations, such as eucaine, tropocaine, stovaine, and alypin, all seem to be harmful in some degree to the tissues surrounding the sensory nerve endings. In the case, however, of stovaine this damage may be slight or even negligible, in view of the remarkable results of 400 operations under spinal analgesia, related on p. 1256 by Mr. B. H. Slater, medical superintendent at St. Luke's Hospital, Bradford. No death in this series could be ascribed to the stovaine employed—the two patients dying on the table being already in a moribund condition—and Mr. Slater can of his own experience cite no disadvantage of spinal analgesia, provided the technique be correct, save the slight extra work which devolves on the surgeon. The advantages speak for themselves. Spinal analgesia is safer than general; it gives rise to no chest complications; the comfort of the patient is vastly increased, so that a stroll through the wards after operation day suggests "a convalescent home" in the case of spinal analgesia, and "the deck of a cross-Channel packet in dirty weather" in the case of general anæsthesia. With spinal anæsthesia the surgeon finds complete muscular relaxation; he has no anæsthetic anxiety; the patient does not suffer from shock and can be consulted if necessary during the operation; the air of the theatre remains pure. General anæsthesia must set its claims very high to overshadow this record. The review in the *Prescriber* alludes to another application of regional anæsthesia, originated by Sellheim in 1905, of which more is likely to be heard; paravertebral anæsthesia consists in blocking the last five dorsal nerves on each side by means of novocaine injection, and has been lauded as the method of choice for operations on the kidney. Of other new local anæsthetics set out in the review, we have already given attention to tutocaine. There remains apothesine, a local anæsthetic of the novocaine type, effective for injection anæsthesia, the solutions not being injured by boiling; and a new substance known as butesin, which in the form of picrate salt combines anæsthetic and antiseptic properties and may fill a useful place in the treatment of burns, ulcers, and other denuded painful lesions of the skin. Surgeons and anæsthetists will be grateful to the *Prescriber* for the readily accessible form in which so much accurate information is given.

ACUTE GONORRHŒA IN WOMEN.

THE treatment of acute gonorrhœa in women, which is discussed on p. 1281, presents certain sociological difficulties not encountered in any other condition except syphilis. The point of most moment is whether or not the patient should be informed of the nature of the complaint, and, if she suspects already, whether the suspicion, when accurate, should be confirmed. There are obvious disadvantages in a bald statement of facts, and one should be guided largely by the history accompanying the case. A newly married woman can acquire an acute infection from a mild and almost forgotten gleet nearly as readily as from an acute infection in the male. Similarly, women after childbirth, or when debilitated, may succumb to an infection which normally might not affect them. Again, a woman can harbour the gonococcus in the cervix, apparently for years, until some fortuitous circumstance precipitates an acute salpingitis. Obviously, there are great difficulties in apportioning blame in these circumstances, and no hard-and-fast rule is applicable. Legally, only evidence of the presence of the gonococcus in smear or culture can be accepted as a positive proof of the diagnosis, although it is well known that the organism cannot be isolated in a large proportion of genuine cases of gonorrhœa in women. The wise course, therefore, would be to treat the condition adequately, and, only if called upon, to pronounce definitely, after bacteriological proof, on the nature of the disease.

SPRING TIREDNESS AS A VITAMIN-DEFICIENCY.

IN a paper illuminated by some instructive statistics, Dr. R. Ehrström,[1] of Helsingfors, has made out a case for regarding spring tiredness not merely as a neurosis, but as an expression of vitamin deficiency. His first graph represents a study of the first attendances during 1921 and 1922 at the University Polyclinic in Helsingfors of patients whose symptoms were exclusively or mainly characteristic of neuroses. There were 3039 such patients whose first attendances during the 12 months of the year are mapped out in the heavy line of the graph. It will be seen that these first attendances were most frequent in the spring—the period when general lassitude is most common. After midsummer the graph shows a rapid fall which, except for two slight interruptions, is maintained till the end of the year. The dotted line represents the monthly incidence of the 5471 suicides committed in Finland in the period 1851–1907. It will be seen at a glance that the profile of the two lines is remarkably similar, and Dr. Ehrström suggests that this similarity is due to identity of the factors responsible for both. Their height towards midsummer might suggest to the casual observer that the sunlight and warmth of the early summer had exercised a deleterious effect on the stability of the nervous system, but this is an explanation which Dr. Ehrström does not accept. The incidence of neuroses between April and August and between October and February was as 9·1 to 7·2, and, in the case of suicides, as 10·1 to 6·5, and these differences were, in his opinion, a matter of accessory food substances or vitamins. The good effects of an adequate supply and the ill-effects of an inadequate supply of these substances would seem to be comparatively slow in showing themselves. In the spring, and even in the early summer, the inhabitants of Finland still suffer from the inadequacy of their vitamin supplies during the winter, and the good effects of an adequate supply of vitamins being also tardy, December finds most persons in Finland still enjoying the benefits of the short summer of Northern Europe. As Dr. Ehrström puts it: "We are well in the autumn after the light and open-air life of the summer, and we feel unwell in the spring after the darkness of the winter and a sojourn within four walls. We live, so to speak, in the autumn and winter on the stored-up light of the summer." The fact that animal life in general suffers from the same handicap as human beings in this matter prevents the inhabitants of Finland from making good the shortage of vitamins in the vegetable kingdom by living on the animal kingdom and its products. Dr. Ehrström's study and the conclusion he draws from it, although going at present a little beyond the facts submitted, certainly stress the value of the accessory food substances and the importance of agencies such as sunlight, for which we have only imperfect substitutes. Let us hope that we may be able in the future to bottle and tap such substitutes at our own free will, regulating them with the precision of the gardener whose reservoirs of water enable him to regard with equanimity a persistently cloudless sky.



N= NEUROSES, S= SUICIDES.

MEDICAL EXAMINATION OF FACTORY ENTRANTS.

THE Association of Certifying Factory Surgeons has issued a report in which adverse comment is made upon the findings of the Home Office Committee on the medical examination of young persons for factory employment. These findings, which were briefly stated in our issue of May 24th, are important in that they deal with the very basis of factory medical service, and are concerned with the examination of over a quarter of a million juveniles every year. Both the report of the Association and the findings of the Committee agree in holding that at present all is not as it should be. Many of the criticisms in the report seem to us to be well founded, and they cannot be readily put on one side, as they express the opinion of those practically acquainted with the present position. Perusal of the findings of the Committee and of the comments of the Association leaves an uncomfortable impression that the Home Office Committee have been more concerned with deciding what department should control the work than with making the work really effective. In their short and hurried existence they did not delve deep or consider the fundamental question how to apply the principles of public health medical service, as undertaken by local authorities, to our factory organisation. The Ministry of Health calls upon local authorities to carry out certain medical duties, the Ministry bears a proportion of the expenses incurred, while it leaves to each authority free choice of medical personnel for carrying out the duties. Local authorities appoint for themselves the doctor who is to inspect their children at school, and who, able to obtain advice from medical experts at headquarters, becomes a trusted adviser on all matters concerned with the health of the local school population. So it is with other branches of the public health service which relies essentially on local acquiescence in sound advice rather than upon compulsory action. This method, for various reasons, has not been followed in factory medical service. Here the factory presents a new grouping of the population, which should, like the locality, have free choice of its medical service. But, in fact, the appointments have been made in London, the fees to be paid have been fixed in London, and revision of the appointments has not been a habit at headquarters. Hence, the factory owner has come to regard the certifying surgeon more as an interfering outsider than as a useful friend. The wonder is not that factory medical service is unsatisfactory, but that it is so little unsatisfactory. This it owes to our national capacity for service even when badly organised. The question is whether the time has not come to revise the factory service on the lines of the public health service, when duties would be imposed by legislation, but the choice of doctor would be left to the factory. Inspection might remain, as now, in the hands of a staff of medical experts, reporting to the Home Office, to the Ministry of Health, or to the local authority itself. Once industry appoints its own medical advisers the scope and standard of the work performed would soon exceed legal requirements. Much is made in the report of the Association, and rightly made, of the need for coöperation with school medical service, so that records of school years may be available when the young person starts on his life's work. Surely if the employer and that young person, through his parents, both require access to these records, the question of granting access could and would not be resisted. Any attempt to build upon this needed coöperation a reason for imposing the school medical service upon industry would do little to arouse interest among workers and employers.

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[1] Finska Läkaresallskapets Handlingar, 1924, lxvi., 210.

THE ENTRY-APERTURE OF THE OVUM.

It is only within the present century that the older conception of the implantation of the ovum within the uterus has been replaced by the present-day description, which makes it attain its position by a process of destruction of the superficial part of the stratum compactum of the decidua. The earlier view postulated the well-known reflected, basal, and "true" layers of the mucosa, and the later belief replaces these with a "capsular" for the "reflexa" and a "parietalis" for the "vera." An aperture of entry, through which the ovum comes into the implantation cavity in the decidua, is, then, a necessity of the process, and is in fact well known to all who are acquainted with the literature on the subject. Not many human embryologists, however, have ever had the chance of studying this in actual specimens, and many are only acquainted with what is said by some to be the site of its former position, the "scar" of Reichert. But those who are able to examine the site shortly after the opening has closed will find it occluded by a fibrinous plug, which does not seem to have the leucocyte infiltration pointing to decidual origin. This would seem to be explained by a new description of the immediate closing of the aperture, given by Prof. T. H. Bryce in the very important and highly interesting lectures on Early Human Ova, delivered by him at King's College last month. He showed reason for believing that the aperture is closed at first directly by the trophoblast itself, this being modified later, presumably. In one of the sections he showed on the screen the outer layer was definitely projecting from the opening. This observation is of interest not only as providing for early closure while the ovum is enlarging, and accounting for the state already mentioned as existing a short time afterwards, but also as having some bearing on the question of the condition of the uterine cavity. Moreover, it may have some pathological connexions which will call for elucidation in the future.

THE THERAPEUTIC VALUE OF CINCHONINE.

Sir David Prain, in his Chadwick lecture, reported in THE LANCET of June 7th, remarked that, in view of the complaints of a world shortage of quinine, it must not be decided without consideration that the other alkaloids of cinchona bark are of no value. When this question comes up for settlement attention will have to be paid to a report on this subject recently published by Dr. Wilhelm Cordes,[1] working in the Tropical Medicine School at Hamburg. The author notes that cinchonine, following on the recommendation of Rogers,[2] Acton,[3] and others, is widely praised in Italy as an efficient substitute for quinine. To decide this question for the Hamburg cases he treated 16 early cases of first attacks of tropical (malignant) malaria, giving them all the usual treatment, except that, for each gramme of quinine in the routine, he substituted 1·1 g. of cinchonine alkaloid, the equivalent of 1·5 g. of cinchonine hydrochloride. The alkaloid is tasteless and easy to take, and it was absorbed and excreted in the urine as quickly as quinine, but it proved more ready to cause gastric uneasiness and vomiting. With this treatment, seven of the patients were at once cured, just as he would have expected to happen with quinine. The other nine lost their first attack of fever much as if they had been treated with quinine, but relapses were more frequent, and to secure their complete recovery quinine had to be given to them at last. He found, too, by study of blood films, that *P. falciparum* was less influenced by cinchonine than by quinine, for with it the ring-forms persisted longer in the blood, and reappeared more quickly when it was intermitted. Dr. Cordes concludes that cinchonine is less effective than quinine in the treatment of malignant malaria, although, like other observers, he found it could cure benign tertian, which, he remarks, is relieved by smaller doses of quinine, and even by arsenical preparations which have slight or no influence on the malignant form. On this evidence he has decided definitely that cinchonine cannot fully take the place of quinine. It might prove useful in places where *falciparum* infection does not occur.

SEX-INCIDENCE OF CAUSES OF DEATH.

SOME of the differences in the death-rate of males and females from individual diseases are both puzzling and suggestive. From their effect on the total death-rate the most important of these are tuberculosis, cancer, and syphilis. The crude annual death-rate from phthisis in England and Wales in the year 1922 was 31 per cent. higher in males than in females; while the death-rate from cancer was 11 per cent. higher in females than in males. Such death-rates evidently need further analysis to be satisfactory. In this country tuberculosis of the alimentary tract is slightly higher in males, but in the United States it is stated, in a recent statistical bulletin of the Metropolitan Life Insurance Company of New York, to kill more women than men. The cancer death-rate especially needs subdivision. Thus in 1922 the death-rate from cancer of the buccal cavity was more than seven times as great in men as in women; cancers of the pharynx, œsophagus, stomach, and liver were 28 per cent. more fatal in men than in women; but as cancer of the female genital organs and breasts caused over 25 per cent. of the total female cancer mortality, these more than accounted for the excess of female over male mortality from cancer. Evidently the local incidence of cancer in the two sexes points the way to further investigation into the exciting causes of malignant disease and to the possible adoption of preventive measures. The greater amount of syphilis in males than in females has much social significance. It points to the fact that extra-marital relations are the chief source of this disease; and that notwithstanding the terrible amount of syphilis imported by men into married life, this does not suffice to cause as much mischief as is produced by irregular sexual congress. The figures for general paralysis of the insane confirm this conclusion, the death-rate from this disease being five times as great in men as in women. In the bulletin referred to above, a number of illustrations of sex differences in the incidence of disease are given. The higher death-rate from whooping-cough in girls is well known, and the heavier incidence of all forms of goitre on women appears to be well established. In this country diabetes mellitus is slightly more fatal in women than in men; but in America the reverse appears to be the rule, a difference which may be explicable by the fact that men are more often examined for life insurance than women, and thus in women the disease goes oftener undetected than in men. Pernicious anæmia again is stated to be more common in males in America; in this country, according to official figures, the death-rate is more than 13 per cent. higher in women than in men.

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[1] Archiv für Schiffs- u. Tropen-Hygiene, March, 1924.
[2] Brit. Med. Jour., 1918, ii., 459.
[3] THE LANCET, 1920, i., 1257.

THE FOOD-POISONING INCIDENT AT WEMBLEY.

SOME anxiety has been felt in regard to the recent outbreak of acute gastro-enteritis among visitors to the British Empire Exhibition at Wembley, and Major-General S. Guise-Moores, late R.A.M.C., director of medical services at the Exhibition, has been good enough to furnish us with the following notes.

"Eighty-seven cases of intestinal disturbance accompanied by vomiting, diarrhœa, abdominal pain, and constitutional symptoms, varying in severity, were admitted to the main ambulance station between the hours of 1 and 8 P.M. on June 9th last. The first symptoms supervened from one to three hours after partaking the 'mid-day' meal. The particular causative agent was the veal and ham pie, which was eaten by all the patients without exception. The clinical and symptomatic evidence points to a constitutional disorder due to the absorption of a toxin or toxins present in that food before it was consumed, and was not due to a bacterial infection of the food with subsequent multiplication in the intestine. The majority of the cases admitted to the main ambulance station were sent to their homes by car the same evening. Those that lived at too great a distance from the Exhibition, nine in number, were despatched by motor ambulance to the Willesden General Hospital that night, and discharged the next day. The 'pies' were withdrawn from the restaurants in their entirety very soon after the first cases were seen at the ambulance station. Samples of the pies have been sent for bacteriological investigation and report. Separate investigations are being carried out by the Exhibition authorities, the Ministry of Health, and the caterers concerned. The Ministry of Health has interested itself in the matter and sent Dr. Hancock to interview the D.M.S. of the Exhibition."

General Guise-Moores concludes: "It is considered that local conditions played no part in the causation of this outbreak, but that it possibly lies with factors which at present are difficult to control."

SMOKE ABATEMENT AT NOTTINGHAM.

THE experiment described in the *Municipal Journal* of June 6th, which is about to be made by the Nottingham Corporation in order to abolish smoke, should prove of great interest. It has been realised for some years that the partial coking of coal at a temperature below that used in ordinary gas-works was one of the means which might help towards the solution of the smoke problem, providing as it does a smokeless fuel suitable for domestic use as well as a rich gas and valuable by-products. The difficulty in the past has been to find a commercially practicable method, since the cost as well as the quality of the fuel produced is one of the governing factors. A market for by-products is also essential for the commercial success of such an undertaking. The industry of lace-making, which is special to Nottingham, calls for a very clean air, and this doubtless had some influence in deciding the corporation. The conditions under which 1000 tons of coal per day can be treated at a colliery in the vicinity of the city which provides a market for the solid fuel, gas, and by-products produced should give the experiment every chance of success. We must join issue, however, with our contemporary when it is stated, with reference to smoke, that "municipal authorities are unable to accomplish any improvement worth speaking about." Measurements show that in London and Glasgow there has been a great and steady improvement in the direction of smoke reduction of recent years. There are, unfortunately, no measurements of smoke pollution available for Nottingham, which may, therefore, call itself a "clean city" without fear of contradiction. We would urge the corporation to obtain such measurements without delay for comparison with future conditions which will result from their experiment. Such figures would be of real value both to Nottingham and to the country generally as indicating the degree of success attained.

NEW MENTAL HOSPITAL ACCOMMODATION.

LACK of hospital accommodation for mental disease is acute and almost universal: so long has it prevailed, indeed, that the communal conscience is in danger of becoming hardened. Two bright spots are on the picture. One is the opening, just as we go to press, by the Minister of Health of the West Park Mental Hospital, the fifth institution to be provided by the London County Council on the Horton estate at Epsom. This hospital, when completed, will accommodate 2096 patients (1128 males and 968 females), and includes an admission block, villas for convalescent patients, special wards for the treatment of tuberculosis and dysentery. A chapel, infirmary, and acute wards for female patients will not be ready for occupation until the end of 1925. The other bright spot is the decision of the governing body of the St. Andrew's Hospital for Mental Diseases at Northampton to erect a special hospital for the reception and treatment of early cases of mental disorder. The foundation-stone is to be laid on June 27th, and judging by the plans contained in a circular accompanying an invitation to this ceremony, a very careful study has been made of arrangements elsewhere for the separation of the recently admitted from the chronic insane. Visits were paid by the subcommittee entrusted with this duty to several psychiatric clinics on the Continent, and to an English spa for the purpose of studying hydrotherapy, which is to be an important feature of the treatment employed in the new hospital. Accommodation will be provided for 16 patients of each sex. The equipment of this hospital will evidently be more varied and extensive than that of any other institution of its size in this country. Ten varieties of hydrotherapy are provided for, bacteriological and chemical laboratories, rooms for X-ray and electrical treatment, a dentists' room, and various other facilities for special treatment. The authorities of the St. Andrew's Hospital are to be congratulated on tackling with such vigour an urgent problem which is beset with difficulties. Not only will the expense of building this hospital be considerable, but the expense of maintaining it in full working order will probably be equivalent to a capital expenditure many times greater than the cost of building. A numerous staff will be required in order to administer its special departments with due efficiency, although in regard to laboratory investigations it will be open to the hospital to avail itself of the Joint Board of Research for Mental Disease when material can be sent to Hollymoor for investigation. A précis of the year's research work there appears on p. 1286. We have no information at present as to the arrangements in view for staffing St. Andrew's Hospital, or as to the proportion of the cost of upkeep which is to be borne by the patients. It is observed that the hospital "can, if necessary, be extended," and one may safely predict that such extension will be found desirable. The facilities for treatment are arranged on such a scale as to be capable of dealing with a much larger number of patients than can be accommodated in the hospital as planned at present. The success of this venture will be watched with keen interest by mental hospital authorities throughout the country. In the millennium of lunacy administration such a reception hospital will be considered a sine qua non by every large institution, and in the meantime it is probable that wherever extended accommodation is required the extension will take some such form as this.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXVI.

THE TREATMENT OF ACUTE GONORRHŒA IN THE FEMALE.

GONORRHŒA in the female may start acutely or begin so insidiously that it is scarcely noticed at first by the patient. Pregnant women, and those who have borne several children, are so accustomed to transient attacks of frequency of micturition and leucorrhœa that, in cases of the disease commencing mildly, the condition may not be recognised until complications ensue. As a rule, the younger the patient the more acute the onset. In a case suspected to be gonococcal, the patient should be instructed (1) not to douche for 24 hours before examination, (2) not to empty the bladder for at least three hours before being seen. Neglect to observe these precautions may completely invalidate any opinion expressed as to the absence of the gonococcus in mild cases.

Symptoms.

In private practice there may be some difficulty in getting patients, especially recently married women, to submit to a complete examination, particularly when smears are taken for slides and culture. But the importance of checking the condition at the onset is so great that every effort should be made to establish the diagnosis definitely. The word "inflammation" covers a multitude of sins, and gonorrhœa need not be mentioned unless one is compelled to do so.

The four main signs in the adult are vulvitis, bartholinitis, urethritis, and endocervicitis.

Vulvitis in the adult is usually secondary to a bartholinitis, urethritis, or endocervicitis. The mucous membrane of the vulva in the adult, unlike that in the child, is not readily attacked by the gonococcus until secondary infections by staphylococci or the *Bacillus coli* are superadded to the previous gonococcal trouble. Vulvitis in the adult, therefore, usually occurs in neglected cases, debilitated patients, and women of weak mentality. It yields readily to medicated baths when the conditions causing it are treated adequately.

Bartholinitis.—Inflammation of Bartholin's gland and duct is generally gonococcal. It is unilateral in 60 per cent. of cases. If the duct is inflamed, the orifice on the inner surface of the labium minus, opposite the vestibule, will show as a yellow punctum surrounded by an almond-shaped inflamed area—the "gonococcal macule." The gland is not palpable in health. If it can be felt in the lower third of the labium majus it may be assumed to be enlarged. The condition is usually associated with a vulvitis, and in the early stages can be aborted readily by two injections of 1 c.cm. manganese butyrate (1 per cent.) given, at five days' interval, intramuscularly into alternate buttocks. This drug acts like a charm in the primary inflammatory stage; the vulva clears up, the small central abscess comes to the surface and discharges, the septic condition quickly subsides. If, however, there is already an abscess the size of a walnut, associated with a much swollen labium, the ideal treatment is a T-shaped incision, complete removal of the gland, and gauze packing of the cavity to ensure healing from the bottom.

Urethritis.—This is present in 80 per cent. of cases, but the subjective symptoms are often so mild that only about 5 per cent. of women give a history of pain and frequency. Attention, therefore, is often concentrated on the cervix alone, with the result that, when this is cured, the patient is often pronounced free whilst still dangerously contagious. When urethritis is present, examination will show pus (either directly or after massaging the urethra from the vagina), or inflammatory thickening, induration, or pain on pressure. In addition, the presence of the gonococcus can often be demonstrated in the paraurethral or suburethral crypts. Skene's ducts, two small cul-de-sacs opening on either side or just inside the urethra, are constant sites of infection. Treatment consists in irrigating the urethra with permanganate of potash, 1/10,000, by means of a two-way cannula. Or, instead, one may use a female urethral syringe with a fenestrated nozzle, and inject 1 per cent. protargol in glycerine daily in acute cases, or 10 per cent. protargol in glycerine weekly in chronic cases. As a rule, the female urethra is very tolerant of topical treatment; but occasionally, especially if acute cystitis is present, local treatment cannot be carried out, and then one has to rely on medicated sitz-baths and alkaline treatment for the cystitis. There are a few Littre's glands in the female urethra, and soft infiltrations and suburethral abscesses form occasionally, with subsequent risk of stricture. For these, massage from the vagina on a straight metal sound—22–24–26 French—followed by irrigation, is the treatment indicated. Skene's ducts, and any paraurethral crypts infected, should be obliterated by probes tipped with fused silver nitrate or the thermo-cautery.

Acute endocervicitis is, of course, the cardinal lesion in the adult female. It is also the most difficult to cure; for here we are dealing with a columnar epithelium having many crypts, pouring out an alkaline secretion—in every way the most favourable possible nidus for the gonococcus. The main symptom is a profuse, persistent "vaginal discharge." The carunculæ myrtiformes are generally inflamed, and so examination is painful or impossible in the very early stages. As soon, however, as a speculum can be passed it will be found that the vagina itself is little implicated, but that the cervix is enlarged and tender, the canal is friable, bleeds easily, and is pouring out a thickish yellow discharge over the somewhat eroded posterior lip of the os. Treatment consists in douching the vagina twice daily to remove the discharge, and treating the cervical canal with topical applications as soon as a speculum can be introduced without undue pain. Many combinations of drugs have been tried for this condition. The two methods described below have proved satisfactory.

Hypochlorous Acid Treatment.

This consists in using any of the various chlorine preparations—e.g., Dakin's fluid in the form of chloramine-T, or one of the hypertonic solutions of sod. hypochlorite now on the market, as a douche twice daily, and also as a topical application to the endocervix once a day. The strength of the douche is 1/1000 to 1/500. Douches only are used at first until it is possible to pass a speculum. As soon as this period arrives the instrument is inserted daily if possible—certainly not less than twice weekly—and the fornices and cervix swabbed clear, by means of wool on holders, of the veil of pus and mucus obscuring the field of operation. The cervical canal is next freed from discharge and mucus by Playfair probes tipped with cotton-wool, either dry or soaked in peroxide of hydrogen. When the canal is clear the chlorine solution in a strength of 10 per cent. is similarly applied up to the internal os; and the vagina finally swabbed out with wool on a holder as the speculum is being withdrawn. At the same sitting any inflammatory foci around the urethral or vaginal orifices are also treated. Should there be frequency of micturition a bladder irrigation of 1/1000 is used. These manipulations, combined with a daily sitz-bath, will cause rapid improvement in about ten days; and one can then lengthen the time between topical treatments according to the symptoms. Another drug which can be used in the same manner and in the same strengths is acriflavine.

An equally successful method is the manganese-contramine treatment introduced by McDonagh. The patient is put to bed and an intramuscular injection of 1 c.cm. manganese butyrate is given, followed by a 1·5 c.cm. injection on the fifth day. This drug reduces the acutely painful stage of profuse discharge to a few days; and douches of pot. permanganate, 1/4000, are then given for the next three or four days. The patient is then started on a course of 30 contramine pessaries. These are inserted nightly against the cervix, and held in position by a gauze tampon. The tampon is removed in the morning, when another permanganate douche is given. At the end of the course smears are taken, and if still positive the contramine is repeated. Markedly good results have been obtained by this treatment. For subacute cases, when the patient is seen for the first time after the condition has lasted some months, it will be found that 10 per cent. protargol in glycerine, twice weekly, is an excellent topical application. Each treatment by this drug should be completed by inserting a gauze tampon, soaked in the same medicament, packed round the cervix. There it remains for 12 hours, when it is withdrawn by means of its string, and a douche of 1 per cent. lactic acid given. Normally, the vagina is acid, its acidity being due probably to the *Bacillus acidi lactici*. The strength of the acidity is 0·9 per cent., and this is inimical to most bacteria. Lactic acid in 1 per cent. solution is therefore recommended as a vaginal douche in all chronic conditions because it is the nearest approach to Nature's method.

The Rationale of Douching.

Douching was at one time the only treatment used in combating this disease; and it is still too frequently relied upon in general practice. Many of the drugs used were not only physiologically unsound, but positively detrimental. The so-called mucous membrane of the vagina is not a real mucous membrane. It is a modified skin with a surface composed of squamous epithelium. There are no glands in it, and it is therefore extremely resistant to organisms. Substances like corrosive sublimate, silver nitrate, picric acid, alum, zinc, any of the coal-tar preparations which precipitate albumin, largely destroy the normal protective mechanism by producing a desquamation of the surface epithelium, thus allowing the gonococcus to penetrate much more easily than it otherwise could. A great deal of the "granular vaginitis," which used to be so common years ago, was undoubtedly due to the over-use of powerful caustic douches such as corrosive sublimate; and the reason why we do not see this condition anything like so frequently to-day is because a much more sensible view is now taken of the value of antiseptics as curative agents in themselves. In gonococcal disease the practice of douching with these powerful antiseptics originated from the erroneous assumption that the vagina was infected with the gonococcus, and that any cervical discharge also present could be cured by the vaginal douches used. It is unfortunate from the standpoint of rational treatment that the mucous membrane of the vagina is comparatively insensitive, and so these caustics can be used with impunity—caustics which simply erode away the normal protective layers of the epithelium and so allow infective organisms to penetrate. Powerful antiseptics are not required in the vagina; they do not affect the cervix. Primary gonococcal vaginitis, except in children and in extreme old age, is very rare. Douching the vagina, therefore, should be largely for the mechanical purpose of getting rid of discharge; and a mild acid preparation, such as 1 per cent. lactic, or boric, or any of the preparations such as Dakin's fluid, which does not precipitate albumin, should be used, unless, of course, an infective vaginitis is present.

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ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—The annual distribution of prizes will take place in the Governors' Hall on Friday, June 27th, at 3.30 P.M., when the Duke of Connaught will preside. There will be tea and music on the terrace.

Public Health Services.

SCHOOL MEDICAL SERVICE.

Sheffield.

OF a school roll of close on 84,000, nearly 30,000 children were examined during routine inspection and 19·6 per cent. of the elementary school population were referred for treatment, 12·5 per cent. of these being kept for further observation and 94·8 receiving treatment. The medical staff consists of the school medical officer with seven full-time and five part-time assistants, a chief school nurse with 25 full-time assistant nurses, three dental attendants, and a dispenser. The most recent council schools contain special rooms for medical inspection, and in four schools branch clinics have been established. An extra evening clinic for the treatment of toothache is held three times a week, and its success is evidenced by an average attendance of 44 children each evening. Although verminous conditions have decreased considerably, it is a great pity that attention to bodily cleanliness has diminished. Dr. T. Chetwood reasonably attributes this to closing the shower baths in four of the largest schools. The popularity of the school clinics is demonstrated by the total attendances, which numbered 238,236, an appreciable increase on the figures for 1908, when 34 per cent. of those requiring it obtained treatment. A study of the steady rise in the number of those obtaining treatment in successive years leads inevitably to the conclusion that the popularity of the clinic as well as increased facilities for treatment are the responsible factors. Dr. Chetwood points out that there is obviously a limit which should be set high beyond which it is impossible to go, some children naturally leaving school before treatment is completed and others, a smaller number, being lost sight of owing to removals or other causes, and a trifling percentage who refuse treatment.

The number of cases treated at the X ray and skin clinic totalled 5910 for the year. The incidence of ringworm has diminished considerably, the number of children presenting generalised infection being considerably smaller. Parents now present themselves asking for X ray treatment for the children. The number of scabies cases, too, has dwindled to less than 200, and there has also disappeared the large number of severe impetiginous infections so common up to the end of 1922. Whiteley Wood and Springvale House continue to show good results, and plans are being made to increase the accommodation in both those open-air schools.

Dr. Percival J. Hay has made an elaborate investigation into the ability of the myopic child to maintain a working distance of 30 cm. when wearing glasses. Fifty-three children were examined individually under correction, and the farthest distance at which the finest Jaeger types the child was capable of seeing was noted. Tables are given showing the near vision at 30 cm. and at the distance preferred by the child. "It is natural that all these children would select the distance which would give them best vision and to ask them to keep their work at a longer distance seems to be futile. In any case, it would seem to be wise to find out first what a child's vision is at 30 cm. before we enjoin upon him to keep at that distance." But is Dr. Hay not mistaking the purpose of the sight-saving schools which is to eliminate near work entirely from the curriculum? In a properly conducted myope school no child should be asked to work as close as 30 cm., the kinæsthetic sense is trained as far as possible, and all fine work is taboo. And, in any case, by finer correction many of these children could, no doubt, have had their optimum working distance adjusted to 30 cm. Physical instruction is being dealt with in Sheffield on a thoroughly scientific basis, and in spite of economic restrictions the needs of the Sheffield school children in this direction are being well looked after.

Bootle.

There has been an increase in the amount of work done in all branches of the medical service during the year and the dental work has been extended by the appointment of a second part-time dentist. Out of 3213 children referred for dental treatment 2481 were dealt with. The number of elementary school children examined under the code groups was 4134, and of these 38 per cent. required treatment. Special examinations and inspections amounted to over 9000. Eleven selected cases of discharging ears were treated by zinc ionisation. Four were cured after from 4 to 11 administrations, three ceased attendance, and seven were carried into the new year. The orthopædic scheme with the remedial exercises clinic is working well. 332 cases were treated during the year and 4442 attendances were made. Mouth-breathers accounted for 129 of these, and infantile paralysis for 52.

Shrewsbury.

Shrewsbury has an average school attendance of 3715, and of these 1248 were medically examined; 3·8 per cent. required treatment, and altogether 1148 children made 6371 attendances at the school clinic. Ringworm of the scalp accounted for 183, ringworm of the body for 152, impetigo for 523, and 679 attended for verminous conditions; 4755 attendances are classed as "miscellaneous." Dental treatment was given to 158 children. An effort is being made to educate the children in elementary hygiene, and the result of this ought shortly to make itself evident in the schools. Dr. H. E. Smith deplores the verminous condition of the children, and the prevalence of impetigo which accompanies personal uncleanliness. He attributes the state of things largely to laziness on the part of both parents and children. The teacher can do a great deal in this direction, and the introduction of lessons on personal hygiene if made practical enough ought to stimulate a consciousness of uncleanliness in the children. But precept without practice is worthless.

Bedford.

The work of "following up" has been extended in this county by arrangement with the Bedfordshire Nursing Association for the district nurse to be present at medical inspection, and later on to visit the homes for the purpose of ascertaining whether treatment has been obtained, and if not, to advise and assist parents in obtaining it. A fee of 7*s.* 6*d.* and a capitation grant of 6*d.* per child medically examined is paid for the nurse's attendance. The teachers in this way have the help and coöperation of the district nurse, and although dealing with verminous conditions may cause difficulty at first, the utilisation of the district nurse in this connexion ought to be a distinct advantage to the county. More attention has been paid to paving, draining, and re-tarring playgrounds this year, and the water-carriage system has been introduced into two schools. The number of children examined in the routine group was 5483, and 69·3 per cent. of the parents were present. Dr. R. T. Herdman emphasises the importance of dry shoes and stockings for children coming from a distance. He says that parents, not teachers, make a difficulty of this matter, and steps are being taken to educate parents.

Hartlepool.

After the resignation of Dr. G. A. Jubb in April of last year, the post of school medical officer was vacant until Dr. W. McKendrick took over the work after the summer holidays, with the result that much leeway had to be overtaken, as no routine inspections were undertaken until September. Owing to unemployment, many children were compelled to go poorly clad and bootless to school, and funds were raised to provide boots and stockings for these children. There were 14 cases of malnutrition found, none of which required actual treatment. Parents attend the examinations well, and the school clinic is well patronised. Dental treatment is going ahead, and a clinic is shortly to be opened in Hartlepool, so that the long journey to West Hartlepool, hitherto necessary, will be avoided.

Gillingham.

Dr. W. A. Muir, senior medical officer, states that since the last report a considerable improvement has been effected in the general cleanliness of school sanitary arrangements. Sanitary inspectors now inspect at frequent intervals. Much still remains to be done; in one school there is one hand-basin to 200 boys, and Gillingham is by no means alone in such a penury. Now that so much has been accomplished in remedial provision, it is time to concentrate on preventive measures. Cleanliness is the most important of these—cleanliness of schools and scholars—and here, as Dr. Muir states, example is better than precept. "A few practical examples of sound hygiene are infinitely more valuable than innumerable lessons on health." In Gillingham if only one nit is found on the hair the child is classified as verminous, with the result that of the 15,763 children examined at the nurses' inspections, 9·6 per cent. were found verminous. Sacker combs can be hired by the parents at a charge of 1*d.* The Danish method of treatment for scabies was adopted during the latter half of the year, and in most cases resulted in a cure after a single application. Among 2086 children medically examined, only four cases of rickets were found.

At *Bournemouth* the school medical officer, Dr. W. V. T. Styles, impresses upon parents the advantages they have in living near the sea. They are advised gradually to tan the bodies of their children by exposing them by stages to the sun's rays on the beach in the summer months. Systematic treatment for pre-tuberculous children by sun-baths is carried out daily with excellent results.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 7TH, 1924.

Notifications.—The following cases of infectious diseases were notified during the week—namely, small-pox, 69; scarlet fever, 1344; diphtheria, 657 (as against 788 of the previous week); enteric fever, 82; pneumonia, 742 (as against 900 of the previous week); puerperal fever, 43; cerebro-spinal fever, 3 (as against 14 of the previous week); acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 179 (as against 251 of the previous week); continued fever, 1; dysentery, 10; ophthalmia neonatorum, 139. There were no cases of cholera, plague, typhus fever, or trench fever notified during the week. Of the 69 cases of small-pox, 27 were notified from the county of Derby (Derby 10, Chesterfield 11), and 13 from Northumberland (Ashington). Of the cases of encephalitis lethargica, 22 were notified from the County of London, 11 from the county of Durham, 4 from Bristol, 26 from the county of Lancaster (Liverpool 10), Northumberland 11 (Newcastle-upon-Tyne 6, Wallsend 4), Yorks, East Riding, 9 (Hull 8), Yorks, West Riding, 22 (Sheffield 10, Halifax 2, Bradford 2 Wakefield 2, Wetherby 2), and Monmouth 3.

Deaths.—In the aggregate of great towns the deaths from influenza fell further from 52 to 46. There were in London 8 deaths from diphtheria, 6 only from measles.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Cmdr. J. Thornhill is placed on Retd. List, with the rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Temp. Maj. S. L. Hinde relinquishes his commission and retains the rank of Maj.

ARMY RESERVE OF OFFICERS.

Lt.-Col. F. E. Gunter, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Capt. H. A. Harbison ceases to belong to the Res. of Off. on account of physical unfitness.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers: A. Dickson and A. A. Townsend.

RESERVE OF AIR FORCE OFFICERS.

Flying Officer on probation A. Dickson resigns his commission.

INDIAN MEDICAL SERVICE.

Col. R. Heard, K.H.S., to be Maj.-Gen.

Lt.-Col. E. F. E. Baines to be Col.

HONORARY PHYSICIANS AND HONORARY SURGEONS TO THE KING.

To be Honorary Physicians: Col. H. J. K. Bamfield, I.M.S., vice Maj.-Gen. Sir Courtenay C. Manifold, I.M.S. retd.; Col. J. H. McDonald, I.M.S., vice Maj.-Gen. C. H. Bowle-Evans, I.M.S. retd.; Lt. Col. A. Hooton, I.M.S., vice Maj.-Gen. W. E. Jennings, I.M.S. retd.

To be Honorary Surgeons: Col. F. Wall, I.M.S., vice Col. W. G. Pridmore, I.M.S. retd.; Col. P. Dee, I.M.S., vice Col. H. A. Smith, I.M.S. retd.: Maj.-Gen. T. H. Symons, I.M.S., vice Maj.-Gen. Sir Gerald G. Giffard, I.M.S. retd.

DEATHS IN THE SERVICES.

Major Valentine Good Johnson, R.A.M.C., who died at Sidmouth on June 14th, qualified from St. Mary's Hospital with the Conjoint Diploma in 1905, and had been clinical assistant at the London Lock Hospital and house physician at the Bethlem Royal Hospital. He joined the Army as Lieutenant R.A.M.C. in 1906, reached the rank of Captain in 1909, and that of Major in 1918. He was only 45 years of age, and leaves a wife and many friends to mourn their loss.

Special Articles.

VENEREAL DISEASE IN BELGIUM.

A Successful Campaign.

A PAPER by Dr. L. Bernard,[1] of Brussels, on the work of his dispensary shows that gonorrhœa is on the wane, and syphilis is rapidly disappearing as the result of the concerted measures recently taken against them. It is strange to read of a chancre as a rarity, as a lesion which teachers show to students with the words: "Mark it well, for you may never see it again." During the five years the first State dispensary has existed in Brussels, records have been compiled of 3319 cases representing 57,674 attendances. Of these 3319 cases, 1126 were due to syphilis, 1348 to gonorrhœa, 15 to chancroid, and 1 to inguinal lympho-granuloma. The remaining 829 persons attended the dispensary because they wrongly feared they were suffering from venereal disease. Gonorrhœa being much more prevalent than syphilis, it is remarkable that the numbers of these two diseases treated at the dispensary were approximately equal. Evidently many cases of gonorrhœa never come to a dispensary for skilled treatment, and this is one reason why the incidence of gonorrhœa is not declining as rapidly as that of syphilis. Another curious difference between syphilis and gonorrhœa was the relative numbers of the two sexes: apart from the cases in children, there were 729 male and 376 female cases of syphilis, and 996 male and only 348 female cases of gonorrhœa. These figures suggest that gonorrhœa in the female is comparatively often overlooked.

The Importance of Specialist Diagnosis and Treatment.

Dr. Bernard publishes statistics, culled from official notifications, showing the numerical differences in the diagnoses of syphilis and chancroid in fully equipped dispensaries managed by specialists on the one hand, and under the conditions of a private consultation on the other. In 1921 the ratio of chancroid to syphilis was 0·74 per cent. at the dispensaries and 5·15 per cent. at private consultations. As the same great differences were observed in 1920 and 1919, they were evidently not accidental, and it is probable that, for want of sufficient knowledge and laboratory equipment, physicians are apt to mistake many cases of syphilis for chancroid. It may not matter much to the community if a case of chancroid is taken for one of syphilis, but the opposite mistake may have serious consequences for both the patient and the community.

The Disappearing Chancre.

In 1920 there were as many as 108 cases of primary chancre seen at the dispensary. In 1921 this figure had fallen to 38, and in 1922 to 12. In 1923 there were 16 such cases. In the same period there was a corresponding fall in the number of cases of secondary syphilis, from 102 in 1920 to 11 in 1923. But the number of cases of syphilis, showing no apparent lesion, rose from 74 in 1920 to 147 in 1923. This decline of the proportion of primary cases to all the cases of syphilis from 35·64 per cent. in 1920 to 8·42 per cent. in 1923 is an amazing achievement. Dr. Bernard publishes a chart showing the connexion between various administrative Acts and the incidence of syphilis and gonorrhœa. Thus, in the second quarter of 1920, the Belgian Government provided every doctor in the country with a free supply of specific arsenical preparations, and already in the same quarter the chart shows an abrupt fall in the number of cases of primary syphilis. The same chart brings out the interesting fact that propaganda movements tend to coincide with a great increase in the number of persons coming to the dispensaries for examination, although they are not suffering from venereal disease.

Sources of Infection in Male Cases of Venereal Disease.

Dr. Bernard's classification of the sources of infection shows some surprising observations. Not a single case could be traced to the "official" prostitutes who number about 300 in Brussels, but over 56 per cent. of all the new cases could be traced to clandestine prostitutes. Another 24 per cent. could be traced to "femmes de passage"—a somewhat ill-defined class which played an important part in the dissemination of venereal disease after the armistice when the home-coming, demobilised soldier was received with more warmth than discretion by his patriotic countrywomen. Only about 16 per cent. of the new infections could be traced to mistresses, and only between 2 and 3 per cent. to wives.

Importance of Examining the Cerebro-spinal Fluid in Syphilis.

The following statistics show how unsafe it is to rely solely on a negative serological examination in deciding whether or not syphilis has been cured. In 1923 there were 109 cases of syphilis in which the Bordet-Gengou reaction was negative in the blood and there had been no clinical signs of activity for six months to two years. But only in 30 of these cases was the reaction negative in the cerebro-spinal fluid—in other words, the cerebro-spinal fluid showed signs of persistent disease in more than 71 per cent. of the 109 sero-negative cases. In view of these findings Dr. Bernard insists that a syphilitic patient who contemplates matrimony or departure to the Belgian colonies should have his cerebro-spinal fluid as well as his blood tested for syphilis before conclusions are drawn as to his fitness for either step.

Arsenical or Bismuth Compounds in Syphilis.

In 805 cases arsenobenzene and in 248 cases bismuth preparations were given. Signs of arsenical poisoning occurred in as great a proportion as 18 per cent., but no fatalities had to be recorded, although in nine cases the sequels, such as exfoliative erythrodermia, were serious. On one occasion a supply of arsenobenzene appeared to be particularly toxic, and this consignment was therefore withdrawn by the manufacturers. The number of cases of arsenical poisoning was greatest during 1919, 1920, and 1921, and it would seem that the improvement observed in this respect during 1922 and 1923 must be traced to the conditions under which arsenobenzene is manufactured. The monopoly enjoyed by two manufacturing firms no longer exists, but the many manufacturers now turning out arsenobenzene and similar antisyphilitic preparations have since 1922 been under Government control. Dr. Bernard's experience with bismuth is most promising. Among his 248 cases treated with bismuth there were only 19 in which stomatitis developed. No case of nephritis was observed, and there were only two doubtful cases of jaundice. Bismuth would seem to be more effective than the arsenic preparations in neuro-syphilis, and there can be no doubt that it is far safer to administer. Practically the only risk associated with it is that of stomatitis, and this can, to a great extent, be avoided by careful hygiene of the mouth. The discovery of bismuth is most opportune now that cases of arseno-resistant syphilis are becoming common. Dr. Bernard's opinion of the value of bismuth is so high that he considers it desirable for bismuth to be provided by his Government free of charge.

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[1] Bruxelles-Médical, 1924, iv., 448.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Feeding of Unconscious Persons.

AT a recent meeting of the Vienna Medical Society Dr. Flesch demonstrated his method of feeding persons who are functionally unable to swallow. He refrains from introducing a nasal tube, especially in cases of meningitis, cerebral hæmorrhage, general sepsis, or other conditions of partial or complete unconsciousness. In these persons either a diminished tonus of the jaws and the muscular apparatus of deglutition, with consequent dropping of the lower jaw, or extreme dryness of the mouth or pain, renders swallowing impossible. If sensation is completely absent the reflexes disappear and an endeavour must be made to feed the patient per rectum. Dr. Flesch's method of feeding is as follows. The patient is placed flat on his back and a few grammes (3–5) of lukewarm milk, coffee, soup, &c., are instilled, by means of a dropper or a small spoon, into the nostrils. The liquid makes its way along the vertical floor of the lower nasal passage, drops on the inclined plane of the posterior pharyngeal wall—at an angle of about 110°—and rapidly flows directly into the uppermost part of the œsophagus, where the constrictor pharyngis inferior presses it into the œsophagus. This happens without even touching the laryngeal region, so that there is no danger of aspiration. The method is applicable even when the corneal reflex is absent, for it has been shown by X ray experiments, made with a barium emulsion, that this pharyngeal reflex seems to be the "ultimum moriens" of the act of deglutition. In order to prevent the desiccation of the mucous membrane of the mouth in patients with prolonged and intractable mouth-breathing in coma, unconsciousness, and high fever, Dr. Flesch has constructed a small apparatus which closes the lips but contains a valve, through which expiration only is possible. Thus the patient is forced to inspire through the nose, whilst the moistened expiratory air-blast can pass out through the mouth. The apparatus can be worn for a prolonged period without any harm to the lips.

Prof. Pirquet's Fiftieth Birthday.

The fiftieth birthday of Freiherr Clemens von Pirquet was celebrated recently by his numerous friends and pupils with unusual solemnity. In his clinic the professor was the recipient of congratulations from all sources on this occasion, and the learned societies of Austria, as well as the pediatric societies of Germany and other countries, sent delegates to the professor, expressing their good wishes and their esteem. A special meeting of the Austrian Society for Pediatrics was held on May 12th, in which Prof. Magerhofer, one of Pirquet's oldest pupils from the University of Zagrele (Yougoslavia), delivered an address on the biological value of Pirquet's investigations. It may be mentioned here that Prof. Pirquet was at one time director of the children's clinic at the Johns Hopkins University in Baltimore, and of a similar clinic in Breslau (Germany), before he was called upon to take over the Vienna University children's clinic at the early age of 37. His reputation is international; his reaction is now one of the fundamental principles in diagnosis of tuberculosis. This method was worked out by him when still a young assistant of Prof. Escherich in this city. The problems offered by the infectious diseases soon attracted his attention, and his investigations on allergy gave a solid base for the modern methods of therapy with protein bodies; together with Schick he studied the so-called serum disease and the process of immunisation by vaccination. One of the latest additions to modern therapeutics was the systematic control of nutrition by means of the Nem method—i.e., the nutritional value of foods calculated by the caloric value of 1 g. milk as unit. This method facilitated the systematic feeding of hundreds of thousands of starving children by the "Save the Children Fund" and "Famine Area Fund" of Great Britain and the United States at a minimal cost and with a maximum effect. The clinic where Pirquet has been working for the last 13 years has become the Mecca of doctors desiring knowledge of the important art of treating the ailments of childhood. Original research, excellent organisation, and independent ideas are the leading features of his work.

The Medical Profession and the Problem of Artificial Abortion.

As has been mentioned in a previous letter (vide THE LANCET, Jan. 12th) forensic authorities have taken a very energetic attitude in regard to artificial interruption of pregnancy, even when performed by medical men. In fact, the Supreme Court has recently inflicted severe penalties on several doctors who were charged with having induced abortion without absolute necessity. An order of this court went so far as to make it imperative for all persons coming professionally to a knowledge of an abortion to report the matter to the police. The medical profession has most vehemently protested against such an infringement of the existing law compelling the doctor to maintain professional secrecy. The medical council is supporting the profession in this struggle, and an organised campaign is being maintained in order to bring about a change of legislation in accordance with the requirements of modern views and the necessities of modern life. Whilst supporters of eugenics strongly advocate the widespread use of contraceptives and the instruction of the poorer classes in their use, another section, and by no means a minority section, of the profession favours rather a control of births by giving doctors or a committee of health officers discretionary powers to advise and produce abortion in the first three months of pregnancy. Recently a mass meeting of the profession, attended by about 40 per cent. of the doctors of Vienna, discussed this problem. While Prof. Tandler explained the necessity of birth control from the sociological standpoint—namely, to prevent an excess of offspring in poor families, leading to pauperism—Prof. Hammerschlag pointed out that in the case of deaf-mute or mentally diseased persons eugenic principles should be the guide in considering the advisability of children being born to them. Many other speakers regarded a diminishing birth-rate as a characteristic of all nations attaining a certain level of civilisation. It is inevitable, unless the economic conditions of a people become such that the new-born individual is sure to find its upbringing assured, and at present this is attained nowhere. The meeting passed a resolution which will be brought to the notice of all the authorities concerned and which sets forth that the present drop of the birth-rate is the direct outcome of the social and economic conditions now existing. It cannot be combated by law, but only by removing the underlying causes, and as long as these are effective contraceptive measures are more advisable than abortion, because the latter is always fraught with a certain degree of danger. The resolution further states that the meeting does not advocate free right to procure abortion unconditionally, but that it strongly favours a modification of the law in the light of medical and social contingencies.

THE Williams and Wilkins Company of Baltimore, U.S.A., announce the forthcoming of a book by Dr. John T. King, jun., of Baltimore, entitled Basal Metabolism, for the student and practitioner.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Local Government Bill.

THE anxiety of the medical profession of the Irish Free State as to the Pensions clauses of the Local Government Bill is not likely to be diminished by the speeches made by the Minister of Local Government in debate. If he is correctly reported (and the report is the same in more than one newspaper) he used the following words: "Medical officers at present carried on private practice as well as attending to their public duties, and notwithstanding this fact, they were allowed pensions. It was not considered desirable to continue that practice." If the words mean what they appear to mean, then it is only right to say that the Minister's wishes go far beyond what he has put in his Bill. In the Bill it is clearly laid down that part-time medical officers are pensionable. Some of the Minister's other contributions to the debate leave one uneasy as to his familiarity with problems of public health. The Bill provides for the appointment of whole-time medical officers of health in each county. Mr. Burke, in arguing for the necessity of this step, gave as one of his reasons that the county medical officer of health could act as medical inspector of school-children in his area. One need hardly say that under such conditions both the inspection of children and the public health work would be sterile. The profession and the public are fortunate in having in the Dail one who is so familiar with health problems as Sir James Craig, whose speeches in regard to the present Bill have been sound and constructive.

Inquiry into the Health Services of Ireland.

The first meeting of the Committee of Inquiry into the health services of the Irish Free State, appointed by the Minister of Finance, was held last week. The terms of reference are wide: (1) To inquire into and report on the advisability of the continued maintenance of the system of national health in its present form, and to make any recommendations which the committee consider proper in that connexion; (2) to consider whether it is desirable to institute a system of medical treatment on a contributary basis and, if so, to advise as to the form which such system should take; and (3) to examine into and report on the question whether the medical services at present assisted or maintained out of State or local funds can be improved as respects efficiency and economy and, if so, in what manner, due regard being had to any recommendations made under the preceding paragraph. Prof. W. Magennis is chairman of the committee; and the other members are Sir Joseph Glynn and Dr. W. J. Maguire, chairman and medical member respectively of the National Health Insurance Commission; Dr. Stephenson and Mr. Hurson, of the Ministry of Local Government; Mr. McElligott, of the Ministry of Finance; Mr. Kyd as Government actuary; Rev. Canon McHugh, and Dr. Robert J. Rowlette.

Public Medical Appointments and Competitive Examinations.

The practice of election of medical officers by local authorities throughout Ireland has often been the subject of criticism. At best the electors are likely to be swayed by ties of family and friendship, and at worst charges of bribery have been made. The Ministry of Local Government has just held a sworn inquiry into the circumstances surrounding a recent election of a medical officer in Co. Roscommon, in regard to which charges of bribery were openly made. It is refreshing, therefore, to find a local authority demanding a mode of appointment which would be free of all impurity. At a recent meeting of the Tipperary County Health Board (N.R.) a resolution was unanimously agreed to: "That all medical appointments of the County Health Board be made by competitive examination or selection; that the applicant who has been reported as possessing the highest professional qualifications and experience shall in all cases be appointed; that the Board of Health request the assistance of the Ministry of Local Government in giving effect to this resolution."

An Abortive Meeting of the Irish Medical Association.

It is a curious symptom of the apathy in which the medical profession of Ireland is at present steeped that the annual meeting of the Irish Medical Association summoned for June 12th had to be postponed for want of a quorum. The quorum is 20, and after waiting an hour there were still only 16 members present. The ordinary members of the Association, and of the profession at large, seem to have lost all interest in medical organisation at the very moment when a strong professional organisation is most needed. If the present inertia on the part of the profession continues, not only will medical interests be sacrificed, but, what is more important, the cause of health reform will suffer.

REPORT OF THE JOINT BOARD OF RESEARCH FOR MENTAL DISEASE.

A REPORT of work carried out during the year ending May, 1924, under the Joint Board of Research for Mental Disease, of which Sir F. W. Mott, F.R.S., is the honorary director, has been issued. A portion of the special grant of £400 made by the Board of Control, which was reserved for the investigation of the Basal Metabolism in Mental Disorder, has been expended in the construction of a respiratory chamber of a type similar to that used by Prof. J. S. Haldane and Dr. Graham at the University of Birmingham Mines Department, and about 160 gas analyses have already been made. The Research Board has founded a scholarship, valued at £250 per annum, for the investigation of the pathology of mental disease; Mr. Dennis L. Woodhouse, M.Sc., who has been appointed the first scholar, is undertaking an investigation into the effects of hypnotic drugs upon animals, more especially in relation to their growth and basal metabolism. Under the direction of Dr. F. A. Pickworth the bacteriological, biochemical, and morbid anatomy sections of the research laboratory have been equipped and associated with the clinical work of the hospitals. Over 600 bacteriological examinations have been made; agglutination reactions have been carried out, and the Bordet-Wassermann complement-fixation tests are now done in the laboratory. Other mental hospitals in the provinces, if they desire to avail themselves of the facilities of the research laboratories at Hollymoor, are invited to join the Research Board, when they can send material for investigation according to a given scale of charges. Under the supervision of the honorary director an investigation into the action of tryparsamide in early general paralysis is being made; up to the present six cases have received treatment. The utility of bismoxyl supplied by Prof. Levaditi is under trial at the Maudsley Hospital. Investigations have been instituted to ascertain the extent of the existence of chronic septic foci in cases of mental disorder; an attempt has been made to determine the character of the infections and to correlate them with morbid processes in other tissues. A preliminary communication on the results of the radiography of the bony structures of the head revealing evidence in some cases of deep bony infections associated with the jaws and nasal passages was submitted for discussion to the Medico-Psychological Association's meeting held in London, July, 1923, and was published in the *Journal of Mental Science.* This line of research is being continued. Recently the Birmingham guardians have become associated with the City and University of Birmingham in supporting the Research Board; and on behalf of their Monyhull Colony for Mental Defectives have made a contribution to the funds of the Board, enabling them to utilise the facilities of the research laboratory. They also have representation on the Board.

THE "Chesterfield" silver medal in dermatology at St. John's Hospital for Diseases of the Skin, Leicester-square, London, W.C., has been awarded to Dr. E. J. Tyrrell.

THE Chemists' Exhibition and Empire Drug Trade Mart will be held from June 23rd to 27th in the Central Hall, Westminster, London, S.W. The exhibition will be open each day from 11 A.M. till 8 P.M.

Correspondence.

"Audi alteram partem."

THE SIMMINS APPEAL FUND.

To the Editor of THE LANCET.

SIR,—The final list of donations to this fund brings it to the gratifying total of £1315 6*s.* 4*d.*; the fund is now closed.

The committee which was formed to issue the appeal held several meetings and carefully discussed how best the money subscribed could be utilised. It was unanimously resolved that the interests of the children would be best served by spending the money entirely upon their education. A capital sum of £1250 was accordingly paid to the Commercial Union Assurance Company in return for which a series of policies for each of the two children has been issued whereby for a period of ten years each child will receive a sum of £85 12*s.* 6*d.* per annum from the time it reaches the age of 9 years. After negotiations with the Royal Medical Benevolent Fund and with the kind coöperation of the hon. secretary, Dr. Newton Pitt, who has keenly interested himself in the matter, the committee is happy to report that the Royal Medical Benevolent Fund has agreed to administer, in conjunction with Dr. Nabarro, the monies payable under the said policies, and to apply the same, as and when received, for the education of the children. It is fortunate for the children that the Royal Medical Benevolent Fund is thus interested in them, because the members of the Ladies' Guild will no doubt also help the relatives to look after their well-being. Of the balance of the money collected—namely, £65 6*s.* 4*d.*—the sum of 3 guineas has been paid in connexion with the legal expenses incurred by the Royal Medical Benevolent Fund, leaving a sum of £62 3*s.* 4*d.*, which has been handed over to the relatives.

In conclusion, we should like to add that we are very grateful to all those, both in and out of the profession, who have so kindly interested themselves in the case, either by contributing to the fund or by their offers of adoption. In particular we would thank Mr. Herbert Semon and Mr. James Stobart who were able to secure for the fund £106 14*s.* and £31 15*s.* from members of the Stock Exchange and Lloyds respectively. Mention should also be made of the generous donations received from past and present members of Dr. Simmins's old schools at Westminster and Guy's Hospitals. Our thanks are also due to you, Sir, for the gift of valuable space, for without such coöperation the necessary publicity could not have been given to this deserving case.

We are, Sir, yours faithfully,
W. HALE-WHITE,
Chairman of the Appeal Committee.
H. C. SEMON,
Treasurer.
DAVID NABARRO,
Secretary.

Final List of Subscriptions to the Simmins's Appeal Fund.—Anon (Amara, Mesopotamia) and H. R. Leach, £10 each; J. B. Smith, £3 3*s.*; Dr. Petrie, £2 12*s.* 6*d.*; Cash, £2 2*s.*; J. B. Russell, £1 1*s.*

LEAD AND CANCER.

To the Editor of THE LANCET.

SIR,—The reply to Prof. E. L. Collis's comments (THE LANCET, June 14th, p. 1239) on my recent address, which is reviewed very fairly in your leading article (June 7th), is contained in the address in question (*Public Health*, June, 1924, p. 217). I would suggest that Prof. Collis do me the honour of reading it, for evidently he had not done so when he wrote his letter. I refrain from taking advantage of so obvious a controversial gift. I would, rather, ask the assistance of Prof. Collis in arriving at the truth, which can only be reached along the lines indicated in my address.—I am, Sir, yours faithfully,

June 14th, 1924. W. BLAIR BELL.

ENCEPHALITIS LETHARGICA AND NASAL DOUCHES.

To the Editor of THE LANCET.

SIR,—In THE LANCET of June 7th, p. 1175, there is printed the section of the Memorandum on Encephalitis Lethargica issued by the Ministry of Health giving, amongst other directions, some "Precautions against Infection." Here it is suggested that—

> "those in contact with the case may be advised to use antiseptic nasal sprays or douches and to gargle the throat with solutions such as those advised for influenza. For example, any of the following: 1. One per cent. solution of peroxide of hydrogen. 2. A solution of permanganate of potash, 1 in 5000, in 0·8 per cent. solution of chloride of sodium (common salt). 3. Liquor sodæ chlorinatæ, 0·5 per cent."

Now, when this Memorandum suggests that "these solutions can be used as ordinary throat gargles," I do not think anyone can object to their use. They may certainly be helpful in cleansing and disinfecting the mouth and pharynx—cavities which are only able to protect themselves against bacterial invaders and their products either by expectorating them or by swallowing them into the stomach. There is nothing in the three suggested remedies to damage the mucosa of the mouth and pharynx. But a very different question is raised when it is advised that they should be "snuffed up the nostrils or applied by an efficient spray." The nasal cavities in health are very sensitive and highly organised chambers. The ordinary nerves of sensation, with which they are freely supplied, resent any irritating liquid and any antiseptic, except in such a weak solution as to be useless. The olfactory nerves are readily deteriorated by the use of any but warm, alkaline lotions, isotonic with the blood, and if they are benumbed one of the defensive mechanisms of the nose is weakened. The much more important defensive arrangements supplied by the normal mucus of the Schneiderian membrane, the ciliated epithelium, and the delicate mechanism of the turbinal bodies would all be interfered with by using any of the three suggested solutions as a nasal douche or spray. It is nearly 30 years since Prof. R. T. Hewlett and myself demonstrated that the interior of the healthy nose is a sterile cavity, that the nasal mucus in health is inhibitory to bacterial growth, and that the ciliated epithelia are active and never resting "chuckers-out" of any invaders.

The practical application of these researches is shown by the general disposition of rhinologists to abstain, when possible, after operation, from the use of powders, antiseptics, or plugs in the nose. An antiseptic, to be of any bactericidal value, would have to be of such a strength that it would produce a quite intolerable irritation of the nasal mucosa. Where milder antiseptics have been used, and benefit has been claimed from them, any good effect has doubtless been due to the stimulation of an increased flow of mucus. In conditions of disease, such as ozæna and syphilis, where the sense of smell, the ciliated epithelia, and the turbinal bodies have been all more or less destroyed, the circumstances are different. The nose is then a septic cavity, its sensitive and defensive mechanism are lost, and stronger antiseptics can be used with benefit. During previous influenza epidemics I have seen several cases of damage to the middle ear, and to the accessory sinuses, in patients who had taken their advice from the daily press and had been sniffing Condy's fluid up their nostrils.

It would be well, therefore, if the Ministry of Health's recommendations limited the use of these three lotions to their employ as gargles and mouth washes. The healthy nose provides for its own sterility, and this cannot be improved on. Blowing is all that is required for cleansing it of used-up mucus. If the nose falls below a standard of health—becoming either catarrhal or stenosed—it can be assisted, without harm, by using warm, alkaline lotions, isotonic with the blood. The simplest and readiest is normal saline solution. Others can be made by dissolving 10 gr. of borax or 6 gr. of soda in an ounce of water. Or several of these alkalis can be mixed together and prescribed in the strength of 5 gr. to the ounce. A little white sugar or glycerine or a mild antiseptic (menthol, sanitas, thymol, and the like) in a minute dose may be added to give a pleasant flavour. But all antiseptics are irritating to the nasal mucosa; in a normal nose they are useless and in efficient strengths they are harmful.

I am, Sir, yours faithfully,
StClair Thomson.
Wimpole-street, W., June 11th, 1924.

"INDUCTION" OR "CAUSE" OF CANCER.

To the Editor of The Lancet.

Sir,—My letter to you induced Dr. Archibald Leitch to answer it. The cause of his answer depended upon his agreement or disagreement with me and included the states of his hereditary history, digestion, nervous and vascular systems, to say nothing of his internal secretions. The middle of the first paragraph of his letter contains a sentence which shows he really agrees with what I wrote. I recognise this with great relief and pleasure, because it induces me to believe that the complicated physiology of my learned friend is normal. The diphtheria bacillus can induce in the same individual such opposite effects as diphtheria and immunity thereto, the causes of which are wrapped up in the mysteries of susceptibility and immunity respectively, by which subjects much labour has been induced.

I am, Sir, yours faithfully,
G. Lenthal Cheatle.
Harley-street, W., June 13th, 1924.

To the Editor of The Lancet.

Sir,—May I be allowed to endorse the view expressed by Sir Lenthal Cheatle in his letter on this subject in your issue of June 7th? I would particularly comment upon the following sentence: "It will be well to realise that factors that induce carcinoma belong to a quite different category from those that cause it." I think this is a timely reminder in view of a tendency noticeable at the present time to search for the causes of cancers. (I use this term to include both carcinoma and sarcoma.) My own view, in which I do not think I am by any means alone, is to consider cancer as a specific disease, which has a specific cause. Surely the predisposing factors cannot be regarded as the actual cause? Apart from some known or probable inducing factors, such as tar, soot, certain oils, pipe-smoking, betel-nut chewing, the kangri-custom, to mention only a few, there must be very many others if we are to account for all forms of cancer, of which those induced in the above-mentioned ways constitute only a minute proportion. It seems to me, were the manifold predisposing factors all known, we should scarcely dare to live, lest, by failing to avoid any one of them, the actual cause might be set up.

Four years ago, in the course of a leading article[1] on the Cause of Cancer, it was said: "Adami is more in line with modern conceptions of the cancer process as a profound alteration of cell metabolism when he ascribes malignant disease to an alteration in the activities of the cell, whereby function" (i.e., its specialised function) "becomes lost and only the power of growth remains." That is it; a fundamental alteration in the vital activity of the cell, which *may* be set up (or may *not* be set up: in the great majority of natural cases it all depends on the vital condition of the cell) by any one of various inciting or accessory factors. A long time will probably elapse before we understand the real nature and reason of this pronounced—yet, in my view, not really so remarkable—change in the mode of life of *certain individual* cells of a particular type. May I say that I think efforts might be more concentrated on ascertaining in what different manner a cancerous cell is behaving from a normal one. What is the characteristic and essential *expression* of its altered metabolic activities?

In the first place, the great thing to bear in mind is that the tissue cells are little *animals*—homologues of the unicellular protozoa. I know, of course, that this is generally regarded as the only reasonable and logical view to take; but I think this point is too much taken for granted, without attention being sufficiently paid to the important consequences that follow. And I think protozoologists should do all in their power to emphasise this homology, because of its bearing on progress towards understanding the nature of many of the diseases of still unknown causation. For nearly four years I have been trying to show that tissue cells ingest and (or) digest solid, organised nutriment, notably red blood corpuscles, but also cells. They do this both normally and in pathological conditions. I have termed this behaviour hæmatophagy and hæmetaboly. Normally, this function is exercised for the welfare of the body as a whole, and results in the production of various substances of the nature of "secretions" or "excretions." When a particular type of cell becomes deranged by the action of a ferment-virus, abnormal alteration of the blood elements results and various well-known and characteristic bodies and granules are produced. Ultimately, too, the cells themselves break down, when more bodies and granules are produced as a result of karyolysis.

In cancer, I think something quite different occurs. The vital alteration of the cancerous cell is such that it takes to metabolising and utilising the blood elements *for its own growth and proliferation*, instead of performing this function for the well-being of the body as a whole. In other words, this is a modification of Dr. Charles Creighton's view; and I would venture to draw the serious attention of others to this hypothesis. What is urgently required, I think, is more light on the question of the blood-digestive enzymes of tissue cells, and of the cell antibodies to such enzymes.

I am, Sir, yours faithfully,
London, June 13th, 1924. H. M. Woodcock.

"CONSTRUCTIVE CONSCIOUS CONTROL OF THE INDIVIDUAL."

To the Editor of The Lancet.

Sir,—It is evident that your reviewer (The Lancet, May 17th, p. 1007) has misunderstood, and consequently unwittingly represented my work, in that he has suggested that my conclusions, as set forth in the book with the above title, are those of an "intuitionalist" rather than the result of concrete procedures. I wrote in the preface, "I intend, in this volume, to adhere to my earlier scheme of practical illustration, endeavouring, as far as possible, to give a *demonstrable* illustration in connexion with statements and arguments," and I here repeat that I should have great pleasure in demonstrating to your reviewer the practical working of any of the principles which I advocate. I am certain that you are anxious that The Lancet should be a medium for making known the truth from whatever source it comes, and that you will not be prejudiced against me because I am merely a layman.—I am, Sir, yours faithfully,

F. Matthias Alexander.
Ashley-place, Westminster, S.W., June 13th, 1924.

MEMORIAL TO THE LATE PROF. PETER THOMPSON.

To the Editor of The Lancet.

Sir,—A movement has recently been initiated among the students of the late Prof. Peter Thompson to provide some memorial in the University of Birmingham of his work as professor of anatomy from 1909 to 1921. It has been suggested that his many friends and old pupils in Manchester and London would be glad of an opportunity of helping to keep his memory green. A general committee has been formed and it is proposed to raise a fund to be called the "Peter Thompson Memorial Fund." The ultimate decision as to the form of the memorial should take will depend on the amount which is subscribed, but the general feeling appears to be that the foundation of an annual prize in anatomy would be appropriate. A circular letter has been sent out, but we feel that many who would like to contribute to this fund may have been overlooked.

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[1] The Lancet, 1920, ii., 705.

Subscriptions should be sent to either of the secretaries of the fund at 52, Newhall-street, Birmingham, and cheques made payable to the "Peter Thompson Memorial Fund" and crossed Lloyds Bank.—We are, Sir, yours faithfully,

JAMES C. BRASH,
Chairman.
LEONARD G. PARSONS,
HILDA N. SHUFFLEBOTHAM,
Hon. Secretaries and Treasurers.

THE PSYCHOLOGY OF SEA-SICKNESS.

To the Editor of THE LANCET.

SIR,—Will you kindly permit one who has spent much of his life afloat, commencing in a troopship at the age of a few months and only severing his connexion with the sea after some 17 years spent in all manner of craft, from destroyers and cruisers to battleships and liners, to offer a few observations on the psychology of sea-sickness. Dr. W. H. B. Stoddart is of the opinion that "sea-sickness is always of psychical origin." I confess to being mystified by this statement. "Psychical" is the adjective of "psyche," and by the latter I presume he means "mind." Now "mind" is an abstraction, a *mot de convenance* for the innumerable and multifarious *processes* taking place in brain substance, more especially, probably, in the cortical association areas. Sea-sickness, in my opinion, originates in "things" and not in "processes." Had Dr. Stoddart expressed the opinion that sea-sickness originates in the brain, one could, at any rate, even if disagreeing, have understood what he meant, but to maintain that it originates in a "psyche" is to confuse an abstract function with a concrete substance.

My acquaintance—longer than I care to think of—with this distressful malady as experienced in myself and exemplified in others convinces me that the only rational way to consider it is from a standpoint that regards the organism and the enviroment as an interconnected whole. If the relationship existing between the organism and environment be disturbed in a certain manner sea-sickness ensues. The ultimate origin of sea-sickness is obviously extra-organismal. The peripheral sense-organs convert environmental stimuli into centripetal nerve impulses which, streaming inwards by different routes eventually—that is, after integration and coördination by the cortical neurons—give rise to certain sensations, states of consciousness, and centrifugal nerve impulses that characterise the giddiness, nausea, faintness, sweating, retching and vomiting, &c., of sea-sickness. It is failure on the part of the organism correctly to interpret the resulting coördination of the several streams of nerve impulses flowing cerebropetally from the end-organs of orientation and movement that constitutes the basis of sea-sickness. The unpleasant sights, sounds, and smells, the stuffy, over-heated and vitiated air, incidental to a sea voyage in rough weather, are but powerful contributory factors. Short of stepping ashore and stopping ashore there is only one cure for sea-sickness, and that is adjustment of the conflicting impressions by the brain—adaptation. Under normal conditions the senses of orientation and movement, as derived from nerve impulses originating in the muscles, articular surfaces, in the walls of the otolith organ and semicircular canals, receive confirmatory evidence from corresponding nerve impulses emanating from the organs of vision. In sea-sickness the ingoing messages are utterly contradictory—in short, eye belies ear. Deaf-mutes, in whom the otolith organ is defective or absent, cannot be made giddy by forcible rotation, and are stated to be practically exempt from sea-sickness. There is, again, the evidence afforded by the "phantom swing." This is an apparatus that looks exactly like an ordinary swing attached to the ceiling of a room. In reality it is attached to an axis around which the whole room is capable of rotating; the "swing" itself never moves. When the room is oscillated about the sitter through a gradually increasing arc, the impression he receives from the eye are those of being himself swung, but these impressions are in conflict with those from his other organs of balance and movement (the semicircular canals and otolith receptacle) which are transmitting "messages" to the effect that he is not in motion. This confusion of the sensorium not infrequently results in giddiness, nausea, and even vomiting.

Dr. Stoddart believes that the rise and fall of a boat during a sea-voyage tends to remind certain people "in an unconscious way" of "the respiratory rise and fall of the mother's breast" when, as infants, they were being suckled, and that the sea-sickness with its rejection of food is a mode of repressing this infantile memory. He disposes of the objection that artificially fed infants also grow up into individuals prone to sea-sickness with the explanation that these were either nursed against the mother's breast whilst sucking their feeding-bottles, or else this was "supplemented or replaced by jigging the child to and fro or up and down, cradle-rocking, swinging, and so forth." Possibly, too, their "oral libido" was at too high a potential. May I ask him whether he would further stretch this already severely strained and far-fetched theory so as to include lower animals, such as dogs, who are frequently sea-sick, but who are not, as in the case of the human infant, suckled at pectoral mammæ, nor "jigged," nor "cradle-rocked," and who have no thumbs of their own nor fingers of a nurse to increase their "oral libido"?

It is questionable if those who go down to the sea in ships will gather either sense or comfort from Dr. Stoddart's remarkable assertion that his "explanation of sea-sickness will never cure a patient suffering from it. To be effective, he must discover the explanation for himself, out of his own mind." There are a goodly number of vaunted cures for *mal de mer*, most of them harmful, all of them useless, but an explanation out of one's own mind is a distinct novelty in the way of nostrums.

I am, Sir, yours faithfully,
C. MARSH BEADNELL,
Surgeon Rear-Admiral, R.N.
Chatham.

HYPERGLYCÆMIA AND GLYCOSURIA IN ACROMEGALY.

To the Editor of THE LANCET.

SIR,—In the paper by Dr. A. W. M. Ellis, published under the above heading in your issue of June 14th, no allowances have been made for the variations in the concentration of the blood that appear to take place after a meal in cases where there are disturbances of the functions of the pituitary. Possibly the apparent diminution of carbohydrate tolerance after the operation shown in this case by the percentage of sugar in the blood may be partly accounted for by variations in the blood volume resulting from the test-meal. With reference to the theory Dr. Ellis advances to explain the glycosuria of acromegaly, I may say that the metabolic experiments on animals upon which Mr. H. A. H. Howard and I are at present engaged have given results which tend to support his view, for they suggest that pituitrin is chemically antagonistic to insulin, and that, unlike adrenalin, it does not produce its effects on carbohydrate metabolism by directly influencing the formation of sugar from stored carbohydrate in the body, but by preventing the action of insulin in that direction.

I am, Sir, yours faithfully,
P. J. CAMMIDGE.
Nottingham-place, W., June 16th, 1924.

THE VALUE OF ARC-LIGHT BATHS.

To the Editor of THE LANCET.

SIR,—We have recently been extending here the application of the general arc-light bath, which has been proved useful by Reyn, Sequeira, and others, using a powerful long-flame arc, rich in ultra-violet rays, and exposing the back and front of the body in turn, at first for 5 and finally for 30 minutes, three or four times a week. Such baths notably put up the hæmobactericidal power of the blood, as tested in vitro (Colebrook, Eidinow, and L. Hill). Not only cases of surgical tuberculosis—e.g., a tuberculous hip—and cases of lupus have benefited very considerably from such baths, but also several women, of sedentary indoor occupation, who were suffering from sciatic or "rheumatic" pains, and were generally feeling run down in health. There has also been much benefited a case diagnosed on reasonably sure grounds (X ray evidence, &c.) as one of duodenal ulcer. This man had not been benefited by dietetic treatment, and an operation was discussed.

Perhaps the most interesting and surprising case was that of a man, aged 54, suffering from high blood pressure (220 mm. Hg systolic), breathlessness on climbing stairs, fainting attacks, frequent headaches for three years, and irritability. He had no signs of syphilis or renal disease, and had been previously treated in accordance with the best current medical opinion. Thus, he ate little meat and generally restricted his diet, neither smoked tobacco nor drank alcohol, gently exercised himself in the open air, and had hot baths. Nevertheless, his symptoms had continued unabated. After starting the arc-light baths his headaches vanished, and now, after two months, his symptoms have all gone, together with about 2 st. of his over-weight, his systolic pressure has fallen to 175, and he feels a different man.

Another striking case is that of a girl 16 years of age, ill in health, with approximately a 50 per cent. increase of lymphocytes, diminished polymorphs, a few myelocytes in her blood, the hæmoglobin down to 74 per cent., the abdomen somewhat distended, and a few glands in the right iliac fossa. While some grave disease of the blood-forming organs was considered possible, a doubtful diagnosis of tuberculous peritonitis was made. This girl, together with her blood, has been put into healthy condition by a two months' course of general arc-light baths.

Our daily measurements of ultra-violet radiations, taken with the acetone-methylene-blue gauge, have shown us the great loss of these rays in our cities compared with the open country. By indoor occupations and amusements, by screens of glass, smoke, and clothing, people cut themselves off almost entirely from the ultra-violet rays which in the winter in our climate are naturally weak. The vast metabolic organ formed by the living cells of the epidermis is removed from its natural stimulus—sunlight and open air. Hence, the very great benefit given to a variety of sickly people by arc-light baths. We predict that in two or three years the taking of such baths will become general as a winter pick-me-up.

We are, Sir, yours faithfully,

ALBERT EIDINOW.
LEONARD HILL.

National Institute for Medical Research, Hampstead,
London, N.W., June 17th, 1924.

BRITISH ORTHOPÆDIC ASSOCIATION.—The Association offers a prize of £50 and a medal to be given by Sir Robert Jones for an annual competition amongst members of the association of all grades for an essay on a subject in orthopædic surgery. The subject of the essay for 1924 is the Diagnosis, Treatment, and End-Results of Tuberculous Disease of the Hip-joint. The subject of the essay for 1925 is the Classification and Differential Diagnosis of the Different Forms of Arthritis. The essay is to be submitted typewritten, together with any illustrations and specimens, and forwarded to the Secretary, at 1a, Portland-place, W., on or before Dec. 31st in each year. It must not bear the name of the writer, but should be identified by a motto.

Obituary.

ROBERT BRUCE FERGUSON, M.D. CAMB., D.P.H.

Dr. Ferguson, who died at Surbiton on June 10th, was educated at Cambridge University and St. Mary's Hospital; at the former he graduated in arts and medicine, taking his M.D. in 1895. After qualifying he devoted himself for some time to ophthalmology, holding appointments as house surgeon at the Royal Westminster Ophthalmic Hospital, and clinical assistant at the Royal London Ophthalmic and St. Mary's Hospitals. Later he settled in New Southgate, where in addition to general practice he did ophthalmic work, his knowledge in that branch being much appreciated by his fellow practitioners. He was on the staff of the Passmore Edwards Hospital, Wood Green, and for a time chairman of the council. Dr. Ferguson was author of a useful little book entitled "Aids to the Mathematics of Hygiene," which went through five editions, and he contributed papers on diplopia and vertigo to medical journals. Latterly he had been living in retirement at Epping. He leaves a widow, three daughters, and a son, who with a large circle of medical and other friends will mourn their loss.

RICHARD EMMETT, M.D. DURH., M.R.C.S. ENG.

BY the death of Richard Emmett on June 8th Portsmouth loses one of its best-known public men, and a prominent and much-loved medical practitioner of the older school. Born in 1858 of good West country stock, he received his medical education at St. George's, and after qualifying in 1885 settled down to practise in Portsmouth. Here he quickly established a reputation, not only for professional skill and devotion, but for an ever-ready practical sympathy with all forms of distress. In the days when the standard of Poor-law nursing was low he offered himself as a candidate for the board of guardians with the object of raising that standard and securing the provision of a properly trained nursing staff. In this he was successful, in spite of opposition. He subsequently joined the town council, of which he remained a member for many years. He took an active part in the management of the Royal Portsmouth Hospital. Dr. Emmett was a keen Territorial officer, rising in 1914 to the rank of Lieut.-Colonel, R.A.M.C. It was overwork with his duties as senior medical officer in the district during the war years, in conjunction with the heavy calls of a large general practice which apparently brought on the serious cardiac condition which has now proved fatal. Dr. Emmett was made a J.P. in 1915. He was a man who touched life at many points, was a loyal friend, and a kind and sagacious physician.

CLARENCE ALFRED JOSEPH WRIGHT,
F.R.C.S. EDIN., F.R.F.P.S. GLASG.

Mr. C. A. J. Wright, of Leytonstone, who died last month in his fifty-ninth year, was a son of Dr. Arnold Wright, surgeon to the Rajah of Mysore. He was born in India and studied medicine in Madras, where at the Presidency Medical College he acted as demonstrator in anatomy. Later he went to Edinburgh and continued his studies at the Royal College of Physicians, obtaining the triple qualification L.R.C.P. & S. Edin. and L.R.F.P.S. Glasg. at the age of 23, and was admitted to the Fellowship of these bodies in 1898. Mr. Wright settled in Leytonstone about 26 years ago after some experience of practice in Rochester. He held several appointments in connexion with shipping and insurance companies and was certifying factory surgeon. He became a keen student of medical electrology and of nervous affections, and was for a time associate editor of *Medical Electrology and Radiology*. He was also editor of the *Archives of Rontgen Ray and Treat-*

ment. He wrote several treatises on electro-medical subjects; in 1904 he published an English translation of Freund's "Radio-therapy" and the following year, in the Transactions of the British Electro-Therapeutical Society, an article on Electrical Methods of Local Medication. He also contributed to *Treatment* an article on the Physiological Aspects of Radio-therapy Effects of Radiation upon the Immunising Powers of the Blood. Among his contributions to THE LANCET there appeared in 1904 several letters deprecating the practice of electro-medical treatment by lay persons.

EDWARD CHICHESTER, M.B. LOND.

Dr. E. Chichester, who died recently at Colchester, in his fifty-ninth year, after a long and painful illness, was a well-known East Sussex medical practitioner and honorary surgeon to the Essex County Hospital, of which he was also vice-president. He was educated at Friar Park, Bath, and studied medicine at the London Hospital, qualifying M.R.C.S. and L.R.C.P. in 1891 and M.B. three years later, with honours in anatomy. He subsequently held appointments as house surgeon and resident accoucheur at the London Hospital, and was clinical assistant at the Royal London Ophthalmic Hospital. In his younger days Dr. Chichester was an enthusiastic sportsman and a keen traveller. He was a descendant of the ancient family of Chichester, of Caverleigh, Devon, and was the fourth son of Captain Nugent Chichester. He is survived by a widow, two sons, and a daughter, to whom we extend our sympathies.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council of the College, held on June 12th, Sir John Bland-Sutton, President, in the chair, Dr. Arthur Robinson, professor of anatomy, University of Edinburgh, was introduced and after signing the by-laws was admitted a Fellow of the College.—The secretary reported the death of Prof. Samuel George Shattock, F.R.S., pathological curator of the museum, and the following vote of condolence was passed:—

> The Council hereby express their deep regret at the death of Prof. Samuel George Shattock and their sincere sympathy with Mrs. Shattock and the members of her family in their bereavement. In doing so the Council desire to place on record their high appreciation of Prof. Shattock's services to the College as pathological curator of the museum during 27 years, and they believe that the great collection of pathological specimens, to which he devoted such care and attention, will stand as a lasting memorial of his skill and knowledge. His wide experience, sound judgment, and accuracy of observation made him pre-eminent as a surgical pathologist in this country, and his loss will be greatly felt not only at this College, but also by many members of the profession who sought his advice and opinion.

The following gentlemen were elected examiners for the ensuing collegiate year in the subjects indicated:—

Diploma of Fellow.—Anatomy: Messrs. W. E. Le Gros Clark (St. Bart.'s), W. F. Haslam (Birmingham), F. G. Parsons (St. Thomas's), and William Wright (London). Physiology: Messrs. David H. de Souza (King's Coll.), J. Beresford Leathes (Sheffield), John Mellanby (St. Thomas's), and Ffrangcon Roberts (Cambridge).

Conjoint Board.—Elementary Biology: Messrs. J. P. Hill (Univ. Coll.) and T. W. Shore (St. Bart.'s). Anatomy: Messrs. Henry A. Harris (Univ. Coll.), David Hepburn (Cardiff), and Oscar S. Hillman (Middlesex). Physiology: Messrs. George A. Buckmaster (Bristol) and C. A. Lovatt Evans (St. Bart.'s). Midwifery: Messrs. Eardley Holland (London), C. Hubert Roberts, Donald W. Roy (St. George's), and H. Beckwith Whitehouse (Birmingham).

Sir Berkeley Moynihan was re-elected a representative of the College for the ensuing three years on the Court of Governors of the University of Sheffield.

As the result of the Final Fellowship Examination, held from May 22nd to June 5th, for which 96 candidates presented themselves, 24 candidates were approved. Four of the successful candidates (Arthur John Gardham, John Percival Hosford, Laurence Frederick O'Shaughnessy, and Frederick Hector Scotson) have not yet attained the requisite age and will not receive the diploma until a later date. The Diploma of Fellow was therefore conferred upon the following 20 candidates:—

> William S. Adams, Birmingham and London; Edward P. Brockman, Cambridge and St. Thomas's; Digby Chamberlain, Leeds; Joseph M. Craig, St. Andrews and Guy's; Cecil A. Horder, St. Bart.'s; Philip J. Jory, Otago and St. George's; Cyril A. King, Otago; Reginald C. B. Ledlie, Guy's; Robert C. B. Macrae, Edinburgh and London; Ida C. Mann, Royal Free and St. Mary's; Alan E. Park, Otago and London; Vithaldas L. Parmar, Bombay and Guy's; Conrad V. Patrick, Cambridge and St. Thomas's; Gordon H. Pfeiffer, Sydney, Middlesex, and Guy's; Esther Rickards, St. Mary's; Allan Seddon, Liverpool and London; Harold G. Taylor, Cambridge and St. George's; Arthur H. C. Visick, St. Bart.'s; William R. Williams, Liverpool; and Edric F. Wilson, Guy's.

CAMBRIDGE MEDICAL GRADUATES' CLUB.—A dinner of this club will be held on Friday, June 27th at 7.30 P.M., at Cambridge, in Trinity College. Any member who wishes to be present is asked to inform the Secretary, Mr. W. H. C. Romanis, F.R.C.S., 31, Harley-street, W. 1, as soon as possible.

MEDICO-PSYCHOLOGICAL ASSOCIATION.—The eighty-third annual meeting of the Medico-Psychological Association of Great Britain and Ireland will be held on July 1st, 2nd, 3rd, 4th, and 5th, under the presidency of Dr. M. J. Nolan, at the Medical Institute, College-square, Belfast, and Queen's College, Belfast. On July 1st Dr. F. R. Martin will read a paper entitled the Reaction of the Blood to the Ingestion of Protein in the Psychoses. On July 2nd, after a business meeting, a paper will be read by Dr. T. Houston on the Examination of the Cerebro-spinal Fluid, to be followed by two short papers read by Dr. W. Calwell: (1) The Unconscious, a Suggestion; (2) Short Notes on a Case of Cerebral Sanguineous Cyst with Mental Symptoms following Surgical Relief. In the afternoon the presidential address will be delivered by Dr. Nolan, and a visit will be paid to Purdysburn Villa Colony. On July 3rd, in the morning, a paper will be read by Dr. A. T. Hobbs, of Toronto, entitled a Survey of American and Canadian Opinion as to Focal Infections as Causative Factors in Functional Psychoses. Dr. R. Marshall will contribute some notes on Encephalitis Lethargica, and Prof. G. M. Robertson will read a paper entitled Is Dementia Præcox a Definite Clinical Entity? Demonstrations and pathological specimens will be on view. In the afternoon a paper will be read by Dr. Chalmers Watson entitled Further Reflections on the Rôle of Auto-Infection in the Ætiology of Acute and Chronic Mental Disorders, and in the evening the annual dinner of the Association will be held. On July 4th a visit will be paid to Downpatrick Asylum. At 11.30 A.M. Sir Frederick Mott will read a paper entitled the Thyroid Gland in Bodily and Mental Disease, to be followed by a paper by Dr. W. R. Dawson on the Work of the Belfast War Hospital, 1917–19. For July 5th various excursions have been arranged. The Maudsley Lecture nominee for next year will be Dr. Shaw Bolton.

OXFORD OPHTHALMOLOGICAL CONGRESS.—The fifteenth annual meeting will be held on July 3rd, 4th, and 5th, Sir Anderson Critchett, the Master, presiding. The Congress will be opened with an address of welcome by the Master at 10.30 A.M. on July 3rd, and at 10.45 a discussion on the General Principles of the Treatment of Convergent Concomitant Strabismus will be opened by Dr. E. Landolt and Dr. E. Thomson. Those taking part include Dr. G. E. de Schweinitz, Mr. T. Harrison Butler, Mr. R. Beatson Hird, Mr. Ernest Clarke, Mr. A. F. MacCallan, Mr. Claud Worth, Mr. Angus MacGillivray, Dr. Stewart Barrie, and Dr. Marion Gilchrist. The annual general meeting will afterwards be held. The afternoon will be devoted to demonstrations in the Scientific and Commercial Museums. At 7.45 P.M. the annual dinner of the Congress will be held in the Hall of Keble College. On July 4th, at 10 A.M., Dr. Howard F. Hansell will describe Four Cases of Atypical Retinitis Pigmentosa Associated with Developmental Abnormalities and Occurring in Members of One Family, and Dr. Harry Friedenwald will discuss: (1) Retinal Vascular Changes in Young Persons, Associated with Various Retinal Diseases; (2) Relation of Chorio-Retinitis Juxtapapillaric (Jensen's Disease) to Other Forms of Chorio-Retinitis. At 11, the Doyne Memorial Lecture will be delivered by Mr. T. Harrison Butler, the subject being Focal Illumination of the Eye with Special Reference to the Clinical Use of the Gullstrand Slit-Lamp. At 12.15 P.M., Dr. F. Park Lewis will speak on Preventive Ophthalmology as an Organised Movement. The remainder of the afternoon will be spent at the Eye Hospital, when demonstrations with Corneal Microscopes and Gullstrand slit-lamps will be given by Mr. Harrison Butler, assisted by Mr. R. J. Coulter, Mr. B. Cridland, and others. On July 5th, at 10 A.M., Mr. H. H. Joy will read a paper on Ophthalmology from a Legal Aspect. Demonstrations in the Scientific Museum will be given by Dr. George Young, Dr. Rayner D. Batten, Dr. Thomson Henderson, Dr. H. M. Traquair, Mr. J. H. Tomlinson, Mr. A. H. MacCallan, Mr. P. H. Adams, Mr. T. Harrison Butler, Dr. Arthur Greene, and Miss R. Millauro.

POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—This Association will hold its annual meeting at the British Medical Association, 429, Strand, London, W.C., on June 26th, at 3 P.M., when Sir Arthur Newsholme, the president, will deliver an address.

MEDICAL GOLFING SOCIETY.—The annual summer meeting was held at the Sunningdale Golf Club on June 12th. In spite of the bad weather 77 members took part in the tournament. All play was on the old course. The results were as follows: THE LANCET Cup: H. Gardiner-Hill (scratch) 78, 1 up on bogey. Henry Morris Cup: W. R. Bristow (4), 2 up. Class I.: 1st, E. Ravensworth Hart (9), all square; 2nd, C. E. Finny (7), 1 down. Best last nine holes: Sir R. Cruise (2); W. H. Lamplough (1), 1 up. Class II.: 1st, Murray Thomson (10), all square; 2nd, G. Norman (10); C. Gregory (15), 2 down. Best last nine holes: L. Lack (13), J. Bright Banister (18), all square. In the Foursomes the following three couples tied for 1st place at 3 down: E. R. Hart (9) and H. W. Carson (15); G. Sutherland (8) and B. Hamilton (12); M. Page (5) and W. R. Bristow (4).

AN ITALIAN MEDICAL JOURNEY.—A medical tour to the main spas of Italy has been organised by the Italian State Tourist Department (known as the E.N.I.T.) and will take place from Sept. 18th to Oct. 3rd next, under the guidance of Prof. Guido Ruata, M.D., General Secretary of the E.N.I.T. The following spas will be visited: Acqui, S. Pellegrino, Levico, Vetriolo, Roncegno, Salsomaggiore, Bagni di Montecatini, Monsummano, Chianciano, Fiuggi, Agnano. At each spa visited a lecture will be given to illustrate its medicinal qualities, followed by visits to the establishments. The lectures will be delivered in Italian by a medical authority of the station, and copies in French, English, and German will be supplied to the visiting doctors. Doctors to act as interpreters in French, English, and German will accompany the tour. The party will be limited to 200, and the tour is intended solely for members of the medical profession; a certain limited number of tickets, however, will be available for relatives of the participants. The complete charge of the tour is fixed at 1600 lire, including first-class travel and hotel expenses from the starting point at Milan to the conclusion at Naples. The participants will also benefit by a reduced fare from the Italian frontier to Milan—valid from Sept. 6th, and from Naples to the frontier—valid up to Oct. 20th. The application list will be closed when the total of 200 has been reached, and not later than July 31st under any circumstances. Full particulars and application forms may be obtained from the Travel and Tourist Office of the E.N.I.T., 12, Waterloo-place, Regent-street, London, S.W. 1.

PUBLIC HEALTH: THE BORDEAUX CONGRESS.—The congress held at Bordeaux by the Royal Institute of Public Health during and after Whitsuntide was characterised by the practical nature of the communications that were read. In the section of general State medicine and in that of the special hygiene attaching to military and air service, admirable opportunities were given for close comparison between British and French methods, while the interchange of experiences in industrial medicine was fruitful. And this was to be expected, for the British representatives included some of our best-known practical workers, and they sat beside their distinguished French similars. Considerable space and time was allotted to the transactions of the sections dealing with women and public health, and from the medical point of view the most important debates of the congress centred round the care of women and children. Mrs. Massey Lyon described the various child welfare organisations in Great Britain, and the Vicomte Pelleport-Burete described the organisation for the care of puerperal women which is maintained at Bordeaux. An interesting contribution came from Dr. Catherine Chisholm, the medical inspector of the Manchester High School for Girls, who pointed out that examining bodies which failed to see that they were unduly taxing youthful powers were incurring grave responsibilities. Her general conclusions on the matter of physical education of adolescent girls pointed out that physical training should be corrective and educational as well as recreational, and should be distributed over the curriculum and not be relegated to one particular day. In the same section papers were read which instituted interesting comparisons by Mdlle. St. Luc, of Bordeaux, and by Miss Cummins and Miss Phyllis Lyall, respectively almoners at St. Thomas's Hospital, London, and the Maternity Hospital, Glasgow. Miss Lyall well represented the directions of modern opinion in pointing out the need for appropriate Government intervention in respect of the problems of illegitimacy, and revision of the present law in relation to illegitimacy and adoption. French law is more liberal-minded than British law.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.—Applications are invited for the following bursaries under the scheme for a permanent memorial to the late Miss Lucy Robinson: (1) £20 to a student in training for conjoint examination, massage, and medical gymnastics; (2) £20 to a masseuse who gained the I.S.T.M. certificate in massage, was a member of the I.S.T.M., and is a registered member of the Chartered Society, as assistance towards qualifying further in medical gymnastics or medical electricity. Further particulars may be obtained from the Secretary of the Society, 157, Great Portland-street, W. 1, to whom applications for bursaries must be sent not later than June 30th.

DONATIONS AND BEQUESTS.—The late Mrs. Alice Theresa Lucas left by will £1000 to Guy's Hospital, and £10,000 to that institution in certain contingencies which also applies to £5000 to the National Society for the Blind; £5000 to the Hospital for Consumption and Diseases of the Chest, Brompton; £3000 to the Belgrave Hospital for Children; £3000 to the Chelsea Hospital for Women; £3000 to the Victoria Hospital for Children, Tite-street, Chelsea, S.W., and Broadstairs, Kent; £3000 to the London Hospital; £3000 to the Jews' Deaf and Dumb Home, Nightingale-lane, S.W.; £1000 to the Hospital for Women, Soho-square; £500 to the National Society for the Prevention of Cruelty to Children; £500 to the Cancer Hospital, Brompton; and £500 to Queen Alexandra's Hospital Home for Discharged Soldiers.—By the will of the late Mr. Edwin Heard, of Liverpool, the testator left £200 to the Liverpool Royal Infirmary; £100 to the National Institute for the Blind; and all other his property to the Royal Liverpool Children's Hospital.

MILLER GENERAL HOSPITAL FOR SOUTH LONDON.—A dinner is to be held in connexion with the endeavour which Lord Queenborough, the president of this hospital, is making to raise the sum of £46,000 for the hospital extensions. The institution was founded in 1783 as the Kent Dispensary, and has from that time steadily increased in size and utility, though it is still far too small for the needs of the population to which it ministers. King Edward's Fund for London has approved an extension which will eventually mean the addition of 336 beds. At the present moment the hospital has 100 beds, but this is only made possible by utilising the board room, the matron's office, and other administrative accommodation as a ward—obviously an unsatisfactory arrangement. The immediate proposal is to build one more ward block of three wards, giving 78 beds, a main kitchen, stores, and also the first section of a home for nurses. For these additions £46,000 are required, of which £24,000 only are in hand. A sketch of the proposed ward blocks and of the nurses' home is contained in an informative pamphlet which is being sent out from 39, Berkeley-square, London, W. 1, by Lord Queenborough, to whom applications for dinner tickets should be made.

RESEARCH DEFENCE SOCIETY.—The annual general meeting of this society was held on June 13th, at the house of the Royal Society of Medicine, 1, Wimpole-street, W., Lord Lamington, the President, being in the chair. There was a good attendance of members. A satisfactory report of the work done by the society during the past year was submitted, in which among other things it was pointed out how great was the contrast between the present conditions as regarded the attitude of the public towards research and conditions as they were in 1908, when the society was founded. The treasurer stated in his report that the finances of the society were in a satisfactory condition, and that subscriptions and contributions from branches exceeded those of 1922 by £115 and donations by £22. The reports having been passed unanimously, Dr. Andrew Balfour, Director of the London School of Hygiene and Tropical Medicine, then gave a demonstration of a cinematographic film illustrating the natural history of malaria and the preventive method against that disease. This film had been prepared and was lent by the International Health Board of the Rockefeller Foundation. Dr. Balfour began by emphasising the need of the experimental spirit for the development of medicine, and he quoted Sir William Osler in showing that the whole work which has been done on malaria was based on experiments on animals. Sir Ronald Ross's work in India also depended on experimental work on animals, and Dr. Balfour, in pointing out how essential such work was, said that no man of sense or sensibility would use animals to experiment on if he could possibly avoid it. The film shown was one that had been prepared in America to give a vivid and simple picture of the ravages of malaria, particularly for the benefit of the agricultural population of the Southern States. The life-history of the plasmodium was well depicted, and stress was laid on the various methods of breaking the chain of infection at one or other of its links, whether by stamping out the mosquito, rendering man immune by quinine, or by guarding him from the bites of the insect by means of netting. At the conclusion of the film Sir Ronald Ross thanked Dr. Balfour, and pointed out that our present knowledge of malaria had existed for a quarter of a century, yet it was only now that an attempt was being made to tackle the problem efficiently throughout the world.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.—An extraordinary meeting will be held at 11, Chandos-street, London, W. 1, on Friday, June 27th, at 8.30 P.M., when the plans for publishing a journal will be laid before the members of the Society.

LANCASHIRE AND CHESHIRE SOCIETY FOR THE PERMANENT CARE OF THE FEEBLE-MINDED.—The annual meeting will be held in the Mayor's Parlour of the Manchester Town Hall on Thursday, June 26th, at 3.30 P.M., the Lady Mayoress presiding.

Parliamentary Intelligence.

HOUSE OF COMMONS.

MONDAY, JUNE 16TH.

Retrenchment in Indian Army Hospitals.

Colonel Sir **CHARLES YATE** asked the Under Secretary of State for India whether, considering the disastrous effects in Mesopotamia of the retrenchment in hospitals establishment in the army in India carried out in pre-war days, the India Office was prepared to sanction the proposed reduction of 1957 beds in British and 2041 beds in Indian station hospitals, of 15 officers of the Indian Medical Service, and 60 assistant surgeons.—Mr. **RICHARDS** replied: These reductions have been or are in process of being carried out, with the sanction of the Secretary of State where that was required. They are partly due to reductions of combatant strength, and in any case will not seriously affect the improvements introduced since the experience of Mesopotamia.

Indian Assistant Surgeons.

Mr. **HOPE SIMPSON** asked the Under Secretary of State for India how many assistant surgeons of the Indian Medical Department were dismissed during the financial year 1923–24, and how many it was proposed to dismiss during the current financial year; whether any representations had been received on this subject; and whether, in view of the very serious unemployment among Anglo-Indians at the present time, the Government of India could take steps to avoid reduction of cadre until some of the unemployed had been able to obtain other work.—Mr. **RICHARDS** replied: A reduction of 92 assistant surgeons has been sanctioned, including 32 who are in excess of the establishment, but it is not known how many of these were discharged in 1923–24. Certain representations on this and other matters relating to the Anglo-Indian community have been received and transmitted to the Government of India. As in the case of other services, retirements are being carried out on favourable terms, and I fear I cannot hold out hope of any exceptional measures in the case of this department to mitigate the hardship involved in the reductions.

Sale of Patent Medicines.

Mr. **WALTER BAKER** asked the Minister of Health whether in the interests of the health of the community and as some return for the heavy taxation imposed in the form of medicine duty, he would introduce legislation to enable patent medicines to be sold under licences only issuable after an impartial examination of the merits of the proprietary articles.—Mr. **GREENWOOD** replied: My right hon friend fears that in the present state of Parliamentary business it would be impracticable to attempt legislation on this subject this session.

TUESDAY, JUNE 17TH.

A National School of Medicine.

Sir **BEDDOE REES** asked the President of the Board of Education whether the Government had any information concerning the reasons that had led the Council of the University College, Cardiff, to oppose the establishment of an independent national school of medicine, in accordance with the recommendations of the Royal Commission on University Education in Wales.—Mr. **MORGAN JONES** replied: My right hon. friend has himself no information on this matter, which does not fall within the province of the Board of Education. He has, however, made inquiries and understands that it has been the subject of correspondence between the Privy Council and the promoters of a Supplemental Charter for the University College of South Wales and Monmouthshire. The Privy Council, in letters dated Feb. 1st and March 14th, 1923, regarding the Draft Supplemental Charter submitted to them on behalf of the College, gave their reasons for objecting to the complicated scheme therein proposed for the government of the National School of Medicine, and for holding that the interests of the school would be best served by its establishment as an independent unit within the University, on the lines recommended by the recent Royal Commission. The Privy Council, in reply to an inquiry, were informed on Jan. 24th last that it was hoped that the Council of the University College would at an early date be in a position to submit a report to the Court of Governors of the College on the matter; up to the present time, however, no further communication with regard to it has been received by their lordships from the promoters of the Supplemental Charter.

R.A.M.C. Vacancies.

Lieut.-Colonel **ASSHETON POWNALL** asked the Secretary. of State for War if he would state what action it is intended to take to fill the many hundred vacancies for lieutenants in the Royal Army Medical Corps.—Mr. **S. WALSH** replied: There has been a reduction in the establishment of R.A.M.C. officers, and the vacancies are not so numerous as his question would imply. The number of vacancies is only about 40 at present, and I hope that a large proportion of these will be filled as the result of next month's entrance examination. Beyond this I can add nothing to my previous replies, in which I indicated that the present shortage was receiving careful consideration.

VOLUNTARY HOSPITALS COMMISSION.

THE Conference of Local Voluntary Hospitals Committees was held on June 18th at the Ministry of Health, Lord Onslow, chairman of the Commission, presiding. The morning session was opened by the Minister of Health, Mr. Wheatley, who expressed the appreciation of the Ministry for the work the local committees had done already for the public welfare. Lord Onslow outlined the present position. The Commission was instituted two years ago to deal with the distribution of half a million pounds sterling from Government to make up the maintenance deficits. This sum had been administered in three distributions, which were completed in March of this year. He stated that the Conference had been called mainly to discuss the inquiry, undertaken by the Commission at the request of Parliament, into the extent of the voluntary hospital accommodation required in England and Wales, and the best means of providing and maintaining it.

A questionnaire had been sent out to the local hospital committees and had brought in a large number of replies. He said that the situation of the hospitals was now very much more favourable than when Lord Cave's Committee furnished their report, and that now few hospitals had beds closed through lack of money. The question of extensions was in a better position to-day; it had not even been contemplated three years ago. Out of a total of 216 hospitals reported upon, there were 99 who communicated the need for extra beds.

Thereafter representatives of the local hospitals committees gave their views on the problems presented in their own special areas, and it was noted that three points in particular received emphasis from many speakers. First there was the question of greater need for recovery and convalescent beds in order to relieve the pressure on the accommodation of the central hospitals; secondly, the question of the Poor-law infirmaries was dealt with, and it was felt that no use could be made of these institutions by the voluntary hospital type of patients until the stigma of the Poor-law had been removed. Thirdly, the question of paying wards was raised. This was held by several to be an asset to the voluntary system, and a suggestion was made as to how far the voluntary hospitals might carry out the work of the public health authorities if paid for such work, particularly with respect to the treatment of surgical tuberculosis. In order to arrive at a definite conclusion as to the actual proportion of beds required for the population, it was urged that a detailed analysis of hospital waiting lists be made, and the advisability was suggested of issuing another questionnaire in order to obtain the views of general practitioners throughout the country on this subject.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, June 23rd.

ODONTOLOGY: at 8 P.M.

Papers:

Mr. Ivan S. Spain and Mr. F. N. Doubleday: Ultra-Violet Radiations, Their Use and Limitations in Dentistry.

Prof. A. Hopewell-Smith (Univ. of Pennsylvania): The Non-innervation of Dentine (illustrated by a series of lantern slides, photomicrographs and sections under microscopes).

N.B.—The sections under microscopes, illustrating Prof. Hopewell-Smith's paper, will be in position by 7.30 P.M.

Tuesday, June 24th.

Hospitality to Visitors from the Dominions.

A special Social Evening to welcome the medical men from overseas now in London will be held at the Society's house on Tuesday, June 24th. The guests will be received by the President, Sir William Hale-White, and Lady Hale-White at 9 P.M.

The Library will be open, and various objects of interest will be shown. Music, light refreshments and smoking.

At 9.45 P.M. a short Address will be given by the President in the Robert Barnes Hall, on The Story of "Say Ninety-nine!"

Thursday, June 26th.

UROLOGY: at 8.30 P.M.

Discussion:

On Polycystic Disease of the Kidney, to be opened by Sir Thomas Horder and Sir Bernard Spilsbury.

Paper:

Dr. Parkes Weber: Lipoid Speckling of the Renal Cortex—the So-called "Myelin Kidney."

Will those desiring to take part in the discussion send in their names to the Hon. Secretary, Mr. Girling Ball, 77, Wimpole-street, W. 1, as soon as possible.

Thursday, Friday, and Saturday, June 26th, 27th, and 28th.

LARYNGOLOGY }
OTOLOGY } Combined Summer Meeting.

Friday and Saturday, June 27th and 28th.

STUDY OF DISEASE IN CHILDREN: Provincial Meeting at Liverpool.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.

SATURDAY, June 28th.—A special meeting at King George V. Sanatorium, Godalming.

MONDAY.—The ordinary quarterly meeting at 122, Harley-street, London, W.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 23rd, to SATURDAY, June 28th.—CHELSEA HOSPITAL. Daily Operations, &c. Mon., 2 P.M., Mr. J. B. Banister: Backward Displacement. Wed., 2 P.M., Mr. John Ellison: Vaginal Discharge. Thurs., 9.30 A.M., Mr. F. L. Provis: Sterility. Fri., 2 P.M., Mr. Comyns Berkeley: Cervical Fibroids.—CHILDREN'S CLINIC. Mon., 2 P.M., Dem. of Cases. 4 P.M., Dr. H. E. Archer: Biochemical Investigation of Gastro-Intestinal Diseases. Wed., 2.15 P.M., at Crossroads Club, 88, Alexandra-road, St. John's Wood, Dem. of Baby Cases. 3.30 P.M., Dr. Bernard Myers: The Nutritional Disturbances of Infancy. Thurs., 10 A.M., At Children's Clinic, Dem. of Cases. 11.30 A.M., Mr. Rocyn Jones: Birth Palsies and their Treatment. —LONDON SCHOOL OF TROPICAL MEDICINE. Tuesday and Thursday at 2 P.M., Demonstrations on Diseases of Tropical Countries.—ROYAL NORTHERN HOSPITAL, in conjunction with the Royal Chest Hospital, City-road. Special Course in Intensive Medicine and Surgery (second and last week, as per syllabus).—ST. PETER'S HOSPITAL FOR STONE. Clinical Work and Special Lectures daily (second week, as per syllabus).

HOSPITAL FOR SICK CHILDREN, Gt. Ormond-street, W.C.

THURSDAY, June 26th.—4 P.M., Dr. Hutchison: Affections of the Liver in Children.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN.

TUESDAY, June 24th.—5 P.M., Dr. Gray: The "Eczemas" of Infants and Children.

THURSDAY.—5 P.M., Dr. Dore: Psoriasis.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

THURSDAY, June 26th.—5 P.M., Mr. Richard Lake: Intra-Cranial Complications of Middle-Ear Diseases. (Geoffrey E. Duveen Lectures in Otology.)

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, June 23rd.—12 noon., Mr. Simmonds: Demonstration of Fractures. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Addison: Surgical Wards.

TUESDAY.—10 A.M., Mr. Steadman: Dental Dept. 11 A.M., Mr. Endean: Venereal Diseases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Pernet: Skin Dept. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—11 A.M., Dr. Archer: Chemical Pathology. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 2 P.M., Mr. Bishop Harman: Eye Dept.

FRIDAY.—11 A.M., Mr. Simson: Gynæcological Demonstration. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Dr. Burrell: Medical Out-patients.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M., to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE.

MONDAY, June 23rd.—12 noon, Dr. Riddoch. Lecture: Anatomy and Physiology of Nervous System. 2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Birley. Lecture: Tuberculi Combined Degeneration of Spinal Cord.

TUESDAY, June 24th.—12 noon, Dr. Greenfield. Lecture: Cellular Reaction in Nervous System. 2 P.M., Dr. Walshe, Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Clinical Lecture.

THURSDAY, June 26th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes. Lecture: Syphilis of Nervous System.

FRIDAY, June 27th.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Mr. Sargent. Lecture: Tumours of Ponto-Cerebellar Angle.

Applications should be addressed to the Secretary, Medical School, National Hospital for the Paralysed and Epileptic, Queen-square, London, W.C. 1.

J. G. GREENFIELD, Dean.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

MONDAY, June 23rd.—(At the Children's Hospital.) Mr. Leathart: Clinical Cases.

TUESDAY.—(At the Southern Hospital.) Dr. W. Johnson: Neurasthenia.

THURSDAY.—(At the Stanley Hospital.) Mr. A. Evans: Surgical Condition of the Gall-Bladder.

FRIDAY.—(At the Royal Infirmary.) Mr. Litler Jones: Surgical Cases.

UNIVERSITY OF BRISTOL POST-GRADUATE STUDIES. (Bristol Eye Week, June 23rd to 28th, at the Bristol Eye Hospital.)

MONDAY, June 23rd.—10 A.M., Mr. Godby Gibbs: Spectacles. 2.30 P.M., Mr. Godby Gibbs and Mr. E. R. Chambers: Demonstration of Cases.

TUESDAY.—10 A.M., Mr. E. R. Chambers: Glaucoma. 2.30 P.M., Mr. Richardson Cross and Mr. A. E. Iles: Demonstration of Cases.

WEDNESDAY.—10 A.M., Mr. Cyril Walker: Choroiditis. 2.30 P.M., Mr. Cyril Walker: Demonstration of Cases.

THURSDAY.—10 A.M., Mr. A. E. Iles: Significance of Hæmorrhages of the Fundus Oculi. 2.30 P.M., Mr. Godby Gibbs and Mr. E. R. Chambers: Demonstration of Cases.

FRIDAY.—10 A.M., Mr. Richardson Cross: The Occipital Lobe and the Field of Vision. 2.30 P.M., Mr. Cyril Walker: Demonstration of Cases.

Pathological specimens illustrating each subject will be demonstrated daily by Dr. A. D. Fraser.

Appointments.

ROFFEY, B. W., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Assistant Surgeon, St. Bartholomew's Hospital, Rochester.

Jessop Hospital for Women, Sheffield: LEATHES, Prof. J. B., F.R.C.P. Lond., F.R.C.S. Eng., F.R.S., Honorary Physiologist; STACEY, J. ERIC, M.D. Lond., F.R.C.S. Edin., Honorary Assistant Surgeon.

Royal Southern Hospital, Liverpool: TAYLOR, H., M.B., B.S. Lond., Hon. Asst. Orthopædic Surgeon; ROBINSON, A. L., M.D. Liverp., F.R.C.S. Eng., Gynæcologist.

St. John's Hospital for Diseases of the Skin, Leicester-square: FRAZER, E. HASLETT, M.A., M.B., B.Ch., GREEN, L. J., M.R.C.S., L.R.C.P. Lond., and MUIR, D. C., M.B., B.S., Clinical Assistants.

Certifying Surgeons under the Factory and Workshop Acts: DYSON, R. J., M.B., Ch.B. Leeds (Pickering); FAIRWEATHER, J. W. C., M.B., Ch.B. Edin. (Fordoun).

Vacancies.

For further information refer to the advertisement columns.

Bahamas.—Bacteriologist and Asst. M.O.H. £600.
Bloomsbury Dispensary, 12, Bloomsbury-street, W.C.—P. 100 guineas.
Bradford City.—M.O. £600.
Brighton, Sussex Maternity and Women's Hospital.—Hon. S.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. £75.
Derbyshire Education Committee.—School M.O. £600.
Dudley Guest Hospital.—H.S. £200.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.S. £125.
Exeter, Royal Devon and Exeter Hospital.—Asst. H.S. £150.
General Lying-in Hospital, Lambeth, S.E.—R.M.O. £100.
Gilbert and Ellice Islands Colony.—Sen. M.O. £650.
Hong-Kong Government.—Two M.O.'s. Also Asst. Port Health O. Each £600.
Hull Institution and Infirmary, Anlaby-road.—R.M.O. £500.
Liverpool, Royal Southern Hospital.—Hon. Asst. P. and Hon. Asst. S.
Manchester, St. Mary's Hospitals.—Three H.S.'s Each £50.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. Path. £250. Also R.M.O. £200.
Putney Hospital, Lower Common, Putney, S.W.—Res. M.O. £150.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Sen. Res. M.O., Two Asst. Res. M.O.'s. £100 and £80 respectively.
Reading, Royal Berkshire Hospital.—Third H.S. £150.
Rochdale Infirmary.—M.O. in charge of X Ray, &c., Dept.
Royal Chest Hospital, City-road, E.C.—P. in charge of Out-patients.
Royal Ear Hospital, Dean-street, Soho.—Registrar. £50.
St. John's Hospital for Diseases of the Skin, Leicester-square, W.C.—Pathologist. £100.
St. Mary's Hospital for Women and Children, Plaistow, E.—Clin. Asst.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Clin. Assts.
St. Thomas's Hospital.—Visiting Anæsth.
University College Hospital, Gower-street, W.C.—Asst. to Venereal Dis. Dept. £250. Also Hon. Anæsth.
University of London.—External Examiners.
West London Hospital, Hammersmith-road, W.—Asst. Anæsth.
Windsor, King Edward VII. Hospital.—Asst. P., Asst. S., Clin. Assts., and Anæsth.
Wolverhampton and Staffordshire Hospital.—Res. Surg. O. £250.
Wrexham Infirmary.—H.S. £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Portsoy, Banffshire; Bo'ness, Linlithgowshire; Portsmouth, Hampshire; Handsworth, Yorks, West Riding.

Births, Marriages, and Deaths.

BIRTHS.

ABEL.—On June 7th, at Clifton-hill, N.W., the wife of A. Lawrence Abel, M.S., F.R.C.S., of a son.

HARRIS.—On June 12th, the wife of Noel Gordon Harris, M.R.C.S., L.R.C.P., of a daughter.

LLOYD.—On June 9th, at Kensington Hall-gardens, W.. the wife of Vernon E. Lloyd, M.C., M.B., B.S., M.R.C.S., L.R.C.P., of a daughter.

MACLEOD.—On June 7th, at 52, Baxter-gate, Loughborough, Leics, to Dr. and Mrs. Neil MacLeod (née Ruth Hill, M.B., Ch.B.)—a son.

SAVY.—On June 11th, at Sonnhalde, Kingussie, the wife of Felix Savy, M.B., Ch.B., of a son.

MARRIAGES.

COLES—BAGSHAWE.—On June 3rd, at St. John's Church, Bournemouth, Alfred Charles Coles, M.D., D.Sc., F.R.S. Edin., to Frances Edith, third daughter of the late Richard Bagshawe, of Nottingham, and of Mrs. Fenn, Cheveley, Surrey-road, Bournemouth.

GASKILL—GRIFFITH.—On June 13th, at the Streatham Wesleyan Church, Dudley Keverne Gaskill, L.D.S., to Gwyneth Griffith, elder daughter of Mr. and Mrs. Richard Hooson Griffith, Streatham.

DEATHS.

EMMETT.—On June 8th, at "Winton," London-road, Portsmouth, suddenly, Richard Emmett, M.D., J.P., aged 66 years.

FERGUSON.—On June 11th, Robert Bruce Ferguson, M.A., M.D. Camb., D.P.H., &c., age 60.

JOHNSON.—On June 14th, at Shalimar, Sidmouth, Major Valentine Goode Johnson, R.A.M.C.

RAPER.—On May 21st, after an operation, Matthew Henry Raper, M.D. Lond., of Valletta, Godalming, formerly Shoeburyness.

SMITH.—On the 8th inst., at St. Mary's Hospital, London, Matthew Baird Smith, B.Sc., M.B., Ch.B. Edin., of Stroud, Gloucestershire, aged 39.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

COLONIAL HEALTH REPORTS.

FEDERATED MALAY STATES.

FROM a report signed by Mr. W. G. Maxwell, C.M.G., Chief Secretary to the Government, it appears that the census taken on April 24th, 1921, shows that the population of these States (Perak, Selangor, Negri Sembilan, and Pahang) was then 1,324,890, of whom 853,528 were males and 471,362 females. The Chinese population was 494,548, being 61,304 more than in 1911. Practically the whole of this increase was in Chinese females, who now number 351 to 1000 males, as compared with 188 in 1911, and the lessening disparity between the sexes among the Chinese is gratifying as indicating a general tendency towards their permanent settlement in the Federated Malay States. In 1921 the Indian population totalled 305,219, as compared with 58,386 in 1901, the increase being due to the development of the rubber-planting industry. The European population rose from 3284 in 1911 to 5686 in 1921, of whom 93·2 per cent. were of British nationality. The most satisfactory feature of the census is that all the statistics—of sex, of marriage, of age, and of birth-place—show that the immigrant races, who have done so much to develop the resources of the Federated Malay States, are ceasing to look upon these States as a place of temporary sojourn and are tending more and more to make their permanent home here. There were in 1922 34,906 births and 35,028 deaths, the rates being 25·65 and 25·74 per mille respectively. The death-rate is the lowest recorded for 12 years. Deaths of children under 1 year of age numbered 5963, being an infantile mortality rate of 170·83 per mille. As usual, malaria heads the list as the most important cause of sickness and death. The number of deaths recorded was 15,570 (11·44 per mille). The public, though slow to undergo indoor hospital treatment for venereal diseases, is keenly appreciative of the facilities now afforded to outdoor patients. Injections of novarsenobenzol were given to 19,690 persons. Comparatively few cases of gonorrhœa come for treatment. A systematic campaign against yaws makes good progress. In 1922 injections of novarsenobenzol were given to 22,972 persons. as against 12,207 in 1921. In certain districts the disease has been almost eradicated. The Malays travel long distances to obtain treatment. The number of vaccinations was 65,201 as against 68,280 in 1921. It will be noticed that the vaccination-rate far exceeds the birth-rate. As regards infectious diseases, 1 case of plague, 18 of cerebrospinal meningitis, and 16 of small-pox are all there is to report. There was no case of cholera. At the instance of the Infant Welfare Advisory Board an enactment for the registration of midwives was passed during the year. At the Board's request, also, the Government has made arrangements for the training both of midwives and the ayahs employed on estates. There are in the States the following medical institutions: 4 European hospitals; 40 district hospitals; 3 women's hospitals; 3 leper asylums; 7 jail hospitals; 1 quarantine camp (for immigrants); 4 vagrant or decrepit wards; 1 mental hospital; 14 outdoor dispensaries; and 10 town dispensaries. During the year there were 92,690 indoor patients as against 116,785 in the preceding year. Outdoor patients numbered 433,111 as compared with 329,310 in 1921. The decrease in the number of in-patients is largely due to the new town dispensaries, which are most successful and popular. The Mental Disorders Enactment, 1922 (repealing the Lunacy Enactment) marked a very important step; and much is meant by the fact that mental patients are no longer termed "lunatics." The arrangements for early voluntary treatment, and for temporary or conditional discharge should be most beneficial. On Dec. 31st, 1922, the patients at the only institution in the country (the Central Mental Asylum, Tanjong Rambutan) numbered 838 males and 212 females. It is noteworthy that although the number of malaria patients in the year must be some enormous figure, only 78 admissions to the asylum are attributed to malaria. Alcohol accounted for 64 admissions; and it is strange that there were more alcoholic cases amongst the Chinese than amongst Tamils (37 Chinese and 26 Tamils). It is still more strange that opium accounted for only 2 Chinese admissions. Syphilis accounted for 35 admissions. Investigations into the treatment of malaria by quinine and other alkaloids of cinchona have been continued, and details have been sent to the Cinchona Derivatives and Malaria Committee of the Medical Research Council in London. The campaign against malaria is far from being merely a matter of preventing the breeding of anophelines. Malaria is a human disease, and improved methods of its treatment as such will tend to diminish the chances of its being carried from man to man by the agency of the anopheline.

Interesting and important discoveries were made in respect of meliodosis (pseudo-cholera). Investigations of the protozoa of dysentery were continued, as also were studies of new methods of the diagnosis of syphilis.

Brunei.

Mr. L. A. Allen, British resident in Brunei (a native State on the north-west coast of the Island of Borneo), in his report for the year 1922, gives the total population as 21,748. Hitherto no births and deaths have been registered, but an Act for the Registration of Births and Deaths was to come into operation in 1923. A total of 1966 out-patients were treated in Brunei town and the out-stations. The more serious cases (45 in all) were sent to Labuan Hospital; the chief diseases of those admitted were: malaria 14, abscesses 7, venereal diseases 5, and amœbic dysentery 3. Malaria was rather more prevalent in 1922 than in 1921, 282 patients being treated. 87 children were examined for enlargement of the spleen and 16 showed definite enlargement. Ankylostomiasis is undoubtedly present in Brunei to a considerable extent. It is impossible to say how prevalent venereal diseases are as the natives do not come for treatment for gonorrhœa or primary syphilis. There were no cases of dangerous infectious disease in the State during the year. It is interesting to note that the last epidemic of such occurred in 1905-06, when Brunei was decimated by small-pox. Some 3000 vaccinations have been carried out during the past four years. At the beginning of 1922 there was an outbreak of "cholerine" in Brunei town, when many of the children died. The officer in charge reports on this as follows: "On investigating this disease I found that many adults were attacked also by diarrhœa and vomiting and violent cramping pains, but in all such cases a high temperature was present also. Very few adults died, however. The fruit season had just come in, fruit was plentiful, and all the cases I saw had eaten a lot of it." Between March and May there was an epidemic of whooping-cough in Brunei town and in the Temburong district, but the mortality from it was apparently very slight. Dr. T. A. C. Cleverton, Medical Officer, Labuan, was in charge of the department throughout the year, paying routine fortnightly visits from Labuan. His valuable advice and assistance in all health and medical matters connected with the State are much appreciated. The total rainfall in Brunei town for the year was 131·60 inches, which was above the average. The mean maximum shade temperature during the year was 86·99° F. and the mean minimum 73·85°, giving a mean temperature of 80·42°.

Kenya Colony and Protectorate.

Kenya may be described as situated astride the equator on the eastern side of the continent of Africa. The precise boundaries were proclaimed in the Order in Council of 1921. The southern boundary runs from the coast in a north-westerly direction, and those portions of the colony which are most suitable for European occupation lie in the highlands, from 1° to 2° south of the equator, and, in the case of the Uasin Gishu plateau, within 1° north. The Protectorate is a strip of territory along the coast line up to the Tana River, ten miles broad. It includes also the station of Kismayu in Jubaland, with a radius of 10 sea miles landward from that town. It is 2200 square miles in extent and forms part of the dominions of the Sultan of Zanzibar, from whom it is leased at a rent of £17,000 a year. Kenya Colony comprises the remainder of the territory—viz., 242,860 square miles. There was happily no outbreak of any epidemics in 1922. Immediate treatment was accorded to sporadic cases of plague, and the rat destruction campaign was efficiently maintained. The general public health has been satisfactory, but there is, naturally enough in a young and growing community, which finds itself at the moment financially embarrassed, ample scope for improvement. The problem of native housing in the towns is acute, but there has been an effort to deal with it. In Nairobi a native location has been laid out under municipal auspices, and at the end of 1922 50 huts were in course of construction. The scheme was to be extended in 1923, and will serve as a model for other towns. Sanitary inspection is performed by officers appointed for the purpose in Nairobi, Kisumu, and Mombasa. The registration of births and deaths is not compulsory save for Europeans, and it is therefore impossible to furnish reliable figures of the birth- and death-rates amongst Asiatics and Africans. Such figures as there are serve to show that in Mombasa the crude death-rate is 16·7 per 1000 and in Nairobi 21 per 1000 of the population. The Nairobi rate is capable of analysis, and reveals crude death-rates for Europeans, Asiatics, and Africans of 12·4, 15·6, and 27·9 per 1000 respectively. Over the whole country the number of European births and deaths was 261 and 89, giving crude birth- and death-rates of 27·04 and 9·04 per 1000. The basis of the calculation of those rates is the 1921 census, and it may be safely assumed that owing to trade depression the number of natives has not increased. The figures of that census were: Europeans, 9651; Indians, 22,882; Goans, 2431; Arabs, 10,102; others, 627; total 45,633. The native population is estimated at two and a half millions. On the coast the year 1922 will live in the memory as the wettest year on record. In Mombasa 41·08 inches of rain were registered in the one month of May. In ordinary years the coast is fairly healthy for the tropics. The heat is a damp heat, and never compares with the fierce heat of India. The long rains fall in the months of April to June, and short rains during October, November, and December. The hot season is from January to March. In the highlands the heat is seldom oppressive. During the rains fires are welcome at night, and the climate generally is temperate, though the heat of the sun compels the wearing of helmets or terai from 8 A.M. to 4.30 P.M.

The Kenya Medical Journal.

We have received a copy of the first printed issue of the *Kenya Medical Journal*, which circulates throughout Kenya Colony, Uganda, Tanganyika, and Zanzibar. The journal has developed from a small beginning in cyclostyle form nearly a year ago, and is now launched with the coöperation of Mr. R. F. Mayer, of the *East African Standard*, Limited. It is intended for the distribution of medical news of local or general interest, and for the discussion of problems appertaining to medical science in all its branches. The first issue contains the report of an address given by Sir Arnold Theiler on recent investigations into plant toxins and deficiency diseases of stock in South Africa, which, in view of its great interest, might well have been more detailed than it is. The papers include an analysis of 14 cases of lobar pneumonia in the prison hospital at Nairobi, a case of obstructed labour treated by Cæsarian section (wrongly spelled), and a preliminary report on a new bismuth preparation for the treatment of yaws, being a suspension of precipitated metallic bismuth in 50 per cent. glucose solution. The journal is to be published monthly at a cost of 2*s.* a number, or 21 shillings 50 cents for the year, posted in Kenya. The editor may be addressed at Box 641, Nairobi.

INADEQUATE FEES FOR ATTENDANCE ON MILITARY PATIENTS.

Should a soldier fall ill when distant more than a mile from an officer of the Army Medical Service, or from a medical officer of the Special Reserve, or from a civilian medical practitioner engaged by the War Office at contract rates, he is entitled to treatment at the hands of a private medical practitioner on the basis of a tariff set out in Army Form O. 1667. Women on the married establishment of their respective corps and children under 14 years of age enjoy the same privilege. For such attendance the private practitioner must state on his bill the nature of the case, the dates of his visits, and whether or not medicine was supplied. We learn from the tariff that the ordinary fee for a day-visit (including medicine) is 3*s.* 3*d.*, for a night-visit (including medicine) between 10 P.M. and 7 A.M., 4*s.* 6*d.*, distance being charged extra at the approximate rate of 1*s.* a mile in the day and 2*s.* a mile in the night. The fee chargeable for the visit of the military patient to the surgery of the private medical practitioner is 2*s.* The practitioner who sends us details of a case which he attended upon these terms remarks that the fees seem inadequate, and in this we agree, while we note red-ink alterations on the Army form indicating that the prices have been raised by 30 per cent. since this form was printed in 1915. Our correspondent has, no doubt, protested in writing against the inadequacy of the fees, and his protest, reinforced by those of other practitioners similarly situated, should result in further improvement.

A MORE EXCELLENT WAY.

A little volume has recently been published as a memorial to its author, a young medical woman, a member of the Society of Friends, who rendered great though unobtrusive services in connexion with various forms of relief work during the war. The play which gives its title to the volume [1] is described as a "Peace Drama of the Balkan War," and affords conclusive evidence of the thoroughness with which Dr. Thomas had thought out her peace position before the catastrophe of 1914. The book is frankly didactic, but to say this is not to disparage it. It contains passages of real beauty, although—as far at least as the prose sections of the play are concerned—it would have been much improved by a revision of the punctuation. A number of short poems, mainly pacificist and all with a strong religious tendency, conclude a book which is evidently the expression of an unusually attractive personality.

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[1] A More Excellent Way. By Henrietta M. Thomas, M.D. Baltimore: Williams and Wilkins Company. 1923. Pp. 129. 5*s.*

Croonian Lectures

ON

RESEARCHES ON LEPROSY
AND THEIR BEARING ON THE TREATMENT OF TUBERCULOSIS.

Delivered before the Royal College of Physicians of London

BY SIR LEONARD ROGERS, M.D. LOND.,
F.R.C.P. LOND., F.R.C.S. ENG., F.R.S.,
PHYSICIAN AND LECTURER, LONDON SCHOOL OF TROPICAL MEDICINE.

LECTURE IV.*—THE USE OF CHAULMOOGRATES AND MORRHUATES IN THE TREATMENT OF TUBERCULOSIS.

Delivered on June 26th, 1924.

As early as October, 1916, I recorded the opinion that "the reactions produced by gynocardates in leprous tissues, and the apparent destruction of Hansen's bacillus, raises the very important question as to whether some similar reaction may not be obtained in the case of another human acid-fast bacillus—namely, that of tuberculous disease." Shortly after I commenced giving sodium gynocardate orally in tuberculosis without obtaining any striking results, and also made some animal experiments to test my hypothesis, which failed owing to deficient virulence of my cultures of the tubercle bacillus, and late in 1917 I made sodium morrhuate, and, after finding it effective in leprosy, arranged for its trial in tuberculosis, and early in 1919[2, 3] reported on a year's trial of the drug by several experienced observers in India with some promising results, to which I will return after discussing the probable mode of action of the new preparations.

MODE OF ACTION OF CHAULMOOGRATES AND MORRHUATES.

In March, 1920, E. L. Walker and Marion A. Sweeney[4] recorded important tests of the action on acid-fast bacilli in vitro of the sodium salts of the different fractions of the fatty acids of chaulmoogra oil I had made and used in leprosy in Calcutta, and found that the highest melting-point one had little action, but my fractions B and C, which were effective in leprosy, were most active in killing various acid-fast bacilli which will grow in fluid media up to dilutions of about 1 in 100,000, but that the salts of chaulmoogric acid had little effect, and those of the total fatty acids were the most active. Moreover, this action on acid-fast bacilli was specific and 100 times as great as that of pure phenol, but no such effects were obtained against coli and other non-acid-fast organisms. On the other hand, sodium morrhuate and sodium linoleates had no such action, so they stated "we believe that it can be concluded with reasonable certainty that any therapeutic action which chaulmoogra oil may have in leprosy is due to its direct antiseptic and bacteriological action on *B. lepræ*," while they attributed this specific action to the carbon ring structure peculiar to the fatty acids of this oil, and that their results "furnish theoretical grounds for the application of the chaulmoogrates to the therapy of tuberculosis," as I had suggested nearly four years previously.

During the last few months Otto Schobl[5] in the Philippines has largely confirmed and extended Walker and Sweeney's results in a series of experiments in which measured amounts of 42 different oils were added to 10 c.cm. of glycerine agar media, and their effects in inhibiting the growth of inoculated human tubercle bacilli compared with control cultures. The results confirm very closely the conclusions of the earlier workers, although in solid media, in which only a portion of the soaps come into contact with the bacilli, the highest dilution producing complete inhibition of the growth of the tubercle bacillus was 1 in 10,000 in the case of *Hydnocarpus wightiana* oil, which was five times stronger than that of true chaulmoogra oil from *Taraxtogenus kurzii*, of *H. venenata* (Brill), *H. subfactata*, and *H. alcalæ*, confirming my earlier conclusion regarding the great activity of the *Hydnocarpus wightiana* in leprosy. Moreover, sodium gynocardates were the most active, and sodium hydnocarpate was 20 times as powerful as sodium chaulmoograte, again largely confirming my clinical trials. Of the numerous other oils tested only that of cinnamon oil equalled the action of chaulmoogra oils, but unlike the latter was equally powerful against non-acid-fast bacilli, while it is interesting to note that Cashew nut oil came next with one-tenth the action of cinnamon oil, as the former was used locally in leprosy in South America three decades ago.

DIFFICULTIES OF THE DIRECT ACTION THEORY OF CHAULMOOGRA DERIVATIVES.

I have pointed out two serious difficulties in accepting the direct action theory of chaulmoogrates on leprosy bacilli in vivo, for in the first place it will not explain the cases I have mentioned in which steady improvement over many months, and even complete recovery, following prolonged febrile reactions after even a single minute dose of sodium gynocardate intravenously, which could not possibly continue to destroy vast numbers of lepra bacilli in the tissues extending over many months; and secondly, this theory completely fails to explain the undoubted action of sodium morrhuate and the several other soaps against leprosy, which have little or no direct action on acid-fast bacilli in vitro, for Stanley Griffith[6] found that sodium morrhuate when added to solid culture media had no inhibiting effect on the bacillus, although other observers have found the whole cod-liver oil to inhibit its growth as I shall show presently, and in 1921 I came to the conclusion that the remarkable improvement often following febrile reactions produced by sodium gynocardate and morrhuate "appear to be best explained on the theory that, during the extensive breaking down of the bacilli, antigens are formed, which bring about the subsequent prolonged improvement. I have for long considered that the action of the soluble salts of the fatty acids of the several oils I have shown to be effective on leprosy must, in some way, be due to a chemical reaction with the fatty acids in the coating of the acid-fast bacilli, so weakening their protective envelopes as to allow the body cells to deal with them, while the extensive breaking down of the bacilli in the body may lead to immunising antigen formation in the system," and I advocated further research on the subject.

Lipase Theory.—My attention was next drawn by Dr. A. Shaw-Mackenzie to his paper[7] recording that the addition of 3 per cent. solutions of sodium gynocardate, morrhuate, or oleate to a pancreatic extract doubled the fat-splitting effect of the pancreatic lipase on an emulsion of olive oil at blood heat, which led him to suggest "a direct stimulating action of tissue lyposis in, at any rate, partial explanation of the therapeutic effect of sodium morrhuate and sodium gynocardate on acid-fast bacilli." This likely hypothesis led me to investigate the possibility of the substances I had been using, also stimulating the production of fat-splitting lipase in the blood of leprosy and tubercle cases, in the latter of which blood lipase has for some time been known to be reduced in progressive cases, and worked with the kind permission and help of Dr. Mackenzie Wallis in the biochemical laboratory of St. Bartholomew's Hospital.

Blood-lipase Variations in Leprosy.—I suspected that in nodular leprosy cases, with enormous numbers of acid-fast bacilli in the affected tissues, the blood lipases might be even more reduced than in tuberculosis with comparatively few bacilli, and I am immensely indebted to Dr. E. Muir for kindly comply-ing with my request for a number of sera of treated and untreated lepers, which he sent home in sterile ampoules, packed in ice, by sea from Calcutta to London, and I estimated the lipase contents, before looking at the notes of the cases, by the ethyl butyrate test with the following instructive results expressed in terms of c.cm. of decinormal sodium hydrate.

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* For the first three lectures vide p. 1321.

Type of case.	No.	Highest figure.	Lowest figure.	Average.	—
Nodular untreated.	3	0·07	0·00	0·033	Very low.
,, treated ..	9	0·29	0·08	0·22	Normal.
Nerve treated ..	8	0·26	0·17	0·19	,,

The extremely low figures of the untreated nodular cases contrast in a striking manner with the normal rates of the treated of both types, no untreated nerve ones, unfortunately, being included in the series. Moreover, the only treated nodular case which showed a great reduction of the blood lipase—namely, to 0·08—proved to be one in whom a severe reaction had taken place very shortly before his blood was taken, during which it might be expected that the ferment would be used up in breaking down the bacilli, a supposition which was later confirmed by Muir in a long series of estimations he kindly carried out in Calcutta, regarding which he reported to me: "We are finding almost invariably a very low lipase content in severe reactions, and we are finding a good prognosis justified when there is a high lipase content."

We have in these observations a striking confirmation of the lipase theory of action of these preparations, for the great reduction of the blood lipase during the severe reactions, with sudden breaking up of enormous numbers of lepra bacilli, together with the high blood content in leprosy cases improving under the treatment with gradual dissolution and absorption of the bacilli, are both easily explained in accordance with the view that the drugs act by both increasing the amount of lipase in the blood and the stimulating action on this ferment indicated by Shaw-Mackenzie's experiments in vitro. Moreover, the action appears to be a vital tissue one, for Prof. J. B. Collingwood very kindly tried for me, at my suggestion, the action of lipases on tubercle bacilli in vitro with negative results.

It is also obvious that the lipase theory explains in a simple manner the activity in leprosy of soluble compounds of the unsaturated fatty acids of a number of oils, and not only that of chaulmoogra oil, as indicated by Walker and Sweeney's theory. Nor is this conclusion merely of theoretical importance, as it opens up an unlimited field of research in the preparation and trial of derivatives and their chemical compounds of many available oils in the hope of eventually finding still more potent remedies for both leprosy and tuberculosis. Indeed, much work has already been done towards extending the methods already proved of value in leprosy to the even more important problem of tuberculosis, to the consideration of which I must now turn.

DIFFICULTIES IN APPLYING THE TREATMENT TO TUBERCULOSIS.

In attempting to destroy the tubercle bacilli in the body on the lines found successful in leprosy it is essential to bear in mind the greater dangers and difficulties—firstly, owing to tuberculosis so frequently affecting vitally important organs in a manner very rarely seen in leprosy; and, secondly, to the more toxic nature of the tubercle bacillus. Even more serious is the danger of disseminating the organisms with possibly fatal results in view of the appearance of new lesions, with temporary aggravation of the condition sometimes occurring after reactions in leprosy induced by the new preparations. These reasons made me hesitate to try gynocardate of soda intravenously in tuberculosis, while it is irritating subcutaneously, and led me to turn to cod-liver oil and prepare sodium morrhuate, which is almost painless in a 3 per cent. solution subcutaneously. After ascertaining its apparent harmlessness in a few cases, I placed the drug in the hands of several reliable observers with greater clinical facilities than I possessed at the time, and at the end of a year's trial I published their reports verbatim [3] and a summary,[2] which brought out the following points. Dr. Muir reported febrile and local reactions in tuberculous glands, which might be followed by their almost complete disappearance, and similar reactions in lung cases of short duration with temporary increased expectoration, followed by the rapid diminution of both the sputum and the tubercle bacilli in it, and gain in weight and strength, although he did not claim any complete recoveries in the acute type of phthisis seen in Bengal. Major R. Knowles, I.M.S., also reported promising results, with marked gain in weight, in several cases of different types, and made the important observation that tubercle bacilli in the sputum became granular and badly staining as they decreased in numbers before completely disappearing, in a very similar manner to what I had found in leprosy. Dr. Caleb Davies reported very similar results to those of Muir, one case of tuberculous epididymitis and early lung affection clearing up and remaining well three years later, while Major C. I. Brierley, I.M.S., reported remarkable improvement in both a severe pulmonary and in an extensive gland and bone tuberculosis case; but, on the other hand, Lieut.-Col. A. W. R. Cochrane, I.M.S., observed only temporary improvement, but no bad effects, at the Bhowali Sanatorium in the Kumaon Hills, none of the observers having seen any ill-results even from 1 to several c.cm. of 3 per cent. sodium morrhuate intravenously, results which I felt justified me in recording in the hope that "sodium morrhuate will prove at least as useful as the tuberculin treatment now in such general use, and also much safer in the hands of the profession at large, many of whom had not the extensive experience necessary for the safe use of that double-edged weapon—tuberculin."

ANIMAL TESTS OF CHAULMOOGRATES AND MORRHUATES.

In 1920, on my return to England, I renewed my efforts to obtain evidence of the action of gynocardates and morrhuates on tuberculosis-infected rabbits and guinea-pigs, and through the kindness of Sir Walter Fletcher, secretary to the Medical Research Council, and of Dr. Stanley Griffith, arranged to work in the laboratory of the latter at Cambridge, the animals being infected with large doses of bovine and human tubercle bacilli, which killed controls within a few weeks with generalised disease, which Dr. Griffith considered necessary to get any certain results. Under these stringent conditions I failed to obtain any benefit from either sodium salts or ethyl esters prepared from chaulmoogra or cod-liver oils, and in recording these negative results I suggested that although "this research failed to show any beneficial effect from the preparations tested in animals with extremely little resisting power to general tuberculous infection, it does not necessarily follow that they are all useless in chronic tuberculosis in the more resistant human species." Recently Dr. H. Miller has kindly repeated these trials at the pathological laboratory at Midhurst, using large doses, and found the treated animals sometimes died before the controls. Dr. C. H. Browning has pointed out [8] that in mice a chronic form of tuberculosis more akin to that in man can be produced experimentally, and he has most kindly undertaken to test morrhuates in it.

Walker and Sweeney's in vitro tests of chaulmoogra derivatives have naturally led to similar animal experiments by others, the most comprehensive of which are those of C. Voegtlin, M. I. Smith, and F. M. Johnson,[9] in which many scores of guinea-pigs were used with ample controls, being infected with varying doses of tubercle bacilli from the minimal one of 0·001 mg., which only produced definite tuberculosis in 27 per cent. of the controls, through moderate doses up to sufficient to induce acute infections, but they found no evidence of any inhibitory effect of sodium chaulmoogrates, with or without calcium lactate, and concluded: "The net result of this exhaustive experimental test of the value of chaulmoogra oil and its derivatives is therefore negative." J. A. Kolmer, L. C. Davis, and R. Jager [10] as well as F. Leuret [11] obtained similar negative results, but W. L. Culpepper and Marjorie Ableson [12] and E. L. Walker himself [13] have recorded only slightly retarding effects on tubercle in guinea-pigs from these preparations.

CHAULMOOGRA DERIVATIVES IN HUMAN TUBERCULOSIS.

In the meantime gynocardates and hydnocarpates (gynocardate of soda A) were being tried clinically in accordance with my suggestion with the following results. In 1920 Max Biesenthal [14] recorded ten cases of phthisis treated with ten weekly intravenous injections of sodium gynocardate with no benefit, while one patient showed a marked extension of the physical signs in the lungs, indicating a focal reaction of undesirable degree, and in the following year T. J. Beasley [15] reported ten cases treated with Dean's ethyl chaulmoograte, and in two cases observed focal lung reactions like those produced by Koch's original tuberculin in large doses, marked improvement following in one only, and he noted decrease of moisture and increase of tubercle bacilli in the sputum, but no change in the morphology of the organisms, such as has been observed after sodium morrhuate. F. Leuret [11] also used my 3 per cent. sodium gynocardate in two cases with no effect in one, while the other subsequently improved, further trials being indicated, while recently I. D. Bronfin and C. Meckel [16] have reported in detail on the chaulmoogra oil preparations in laryngeal tuberculosis, and found it might cause progressive ulceration, but had no therapeutic value.

Through the great kindness of Dr. W. T. G. Pugh, medical superintendent of the Queen Mary's Hospital for Children at Carshalton, an extensive trial during the last 18 months of both ethyl hydnocarpate and sodium morrhuate has been carried out by Dr. Edna Mawson and Dr. V. F. Fry, to whom I am greatly indebted for reports on their experience. Focal reactions in the form of temporary increased discharge from sinuses was noted after both preparations, and ethyl hydnocarpate in one case of tuberculous kidney was unfortunately followed by generalised tuberculosis, while little benefit appears to have been derived from this chaulmoogra derivative, whose use has for some time been given up in favour of sodium morrhuate, which was also preferred to the hydnocarpate after a short trial at the Fazakerley Hospital of Liverpool.

Thus no definitely beneficial results have been obtained from the use of chaulmoogra oil derivatives in either animal or human tuberculosis, although focal reactions in the diseased tissues occur, sometimes of an injurious nature like those due to excess of tuberculin, subsequent improvement only occasionally being seen, and the results on the whole are very disappointing, no evidence of any direct action on the tubercle bacillus having accrued.

FURTHER CLINICAL TRIALS OF SODIUM MORRHUATE.

Since the publication in 1919 of my paper on the trials of sodium morrhuate in India a number of reports have appeared with variable results, of which the following is a summary. In April, 1920, Captain P. Gunguli, I.M.S.,[17] reported very favourably on its use in the dry, cool climate of Quetta in 37 phthisical sepoys, including only four early cases with steady improvement and disappearance of the tubercle bacilli from the sputum of the two positive ones, while of 28 advanced cases 14 were discharged "cured" by a medical board, 4 were improving, 3 stationary, and 4 died; unfortunately the recovered cases returned to their homes and their after-history could not be obtained. In December, 1920, Max Biesenthal [18] reported on 25 cases treated for an average of four months, 8 being incipient and 17 moderately advanced, but obtained variable and uncertain results, and although the physical signs improved in 16, were unchanged in 4 and in 5 progressed, his impression was that sanatorium cases did as well without the drug, although he thought the method should be tested further. In 1922 M. J. Fine [19] came to a very similar conclusion from the treatment of 1 incipient, 13 moderately advanced, and 1 advanced case of phthisis, and stated that the preparation "deserves further trial and may be placed in the category of aids to our usual treatment of tuberculosis."

W. D. Tewksbury [20] treated 18 cases, 2 with a fair and 16 with an unfavourable prognosis, all being in a moderately or far advanced stage of the disease, and found 9 improved, 6 not improved, while 3 died, and he concluded that "it is difficult to say that the improvement noted in the nine cases is due to the treatment, as we know how often patients of this type will display periods of temporary improvement without any treatment, but it is at least possible that the sodium morrhuate had some beneficial effect. I feel that while our results are not conclusive, they are sufficiently interesting to warrant further work and observation along the same line." This observer, as the result of repeated examinations of the sputum, states that "The most striking feature was the apparent breaking up of the tubercle bacilli in the sputum and the tendency to their diminution in number and disappearance. This was noted in 10 patients, and in two of these the sputum became entirely negative. This is an interesting and remarkable phenomenon when we remember that these were advanced, open cases, and as it occurred in more than half the series, could hardly be attributed to anything other than the sodium morrhuate." This confirms the observations of R. Knowles,[3] and indicates a specific action of the drug on the tubercle bacillus in vivo, in spite of a negative one in vitro, and the action in vivo is explainable on the lipase theory, although not on any direct action theory such as Walker's with regard to chaulmoogra derivatives.

In December, 1923, the late Dr. P. W. R. Boelke, of Sydney, in a lengthy paper,[21] claimed uniformly good results during four years' trial in all forms and stages of tuberculosis from 3 per cent. freshly prepared sodium morrhuate forming a clear solution at blood heat, given in small subcutaneous doses of 0·1 c.cm., increased by the same amount at each injection up to 1 c.cm., any local tuberculin-like reaction at the site of injection being an indication for reducing the dose. Illustrative cases with disappearance of the bacillus from the sputum were narrated, although the total number treated was not given, and trials by a number of experts at my request, unfortunately, have not fully confirmed his claims, but have yielded some interesting results which may now be summarised from the reports so kindly sent to me. The necessity of only using freshly-made clear solutions at blood heat, which Boelke lays stress on, is in accordance with the fact that I have for long known—namely, that unless sodium morrhuate powder is kept quite dry, which is not always easy in a hot, humid, tropical climate, it deteriorates and loses its value, doubtless accounting for some of the recorded failures of the drug. In this connexion I may note here that Dr. E. H. Hankin, of Agra, has sent me records showing great benefit in distemper of cats from the combined use of sodium morrhuate and distemper vaccine, but only fresh sodium morrhuate was of any use, and his observation has recently been confirmed as regards dog distemper by Mr. N. Chambers, F.R.C.V.S., to whom I am indebted for notes of three remarkable recoveries under this method of treatment.

The appearance of Dr. Boelke's paper led Dr. John Hume, of Perth, N.B., to report to me his four years' experience of sodium morrhuate, in from 0·5 to 1 c.cm. doses of the 3 per cent. solution with 0·5 per cent. phenol in rubber-capped bottles twice a week for six to eight months, the bottles being stood in warm water for a few minutes before use, when the solution should become clear. I hope his report will be published in full, but the following is a brief analysis of the salient points. Of 11 cases 3 advanced ones ended fatally after a few months to two years, but 7 of phthisis, including one with ulceration of the larynx and one with cavitation, and one of genito-urinary tuberculosis, all cleared up, losing active physical signs, temperature, and tubercle bacilli from the sputum or urine, and from 11 to 19 lb., with an average of 15 lb., were gained, and he concludes: "With sodium morrhuate the improvement is soon observed, and leads to a complete arrest of the disease in many early cases. It is a great help in advanced cases, but not so successful as in early ones. Patients do not require to be pressed to go on with the injections. They feel stronger and better with them and have a sense of well-being unobtainable by other methods."

TRIALS IN CASES NOT YIELDING TO SANATORIUM TREATMENT.

Thanks to the great kindness of several tuberculosis experts, I am able to report on short trials of sodium morrhuate in a few cases of phthisis not responding even to sanatorium treatment, a severe but necessary test to enable the limitations of the drug to be ascertained, and I wish to express my great indebtedness to all who have sent me reports.

With the kind permission of the Brompton staff, Dr. R. C. Wingfield reports on eight cases treated at the Frimley Sanatorium, only 1 of whom showed considerable improvement, 2 continued previous progress, 2 showed no change, and in 3 the disease continued to progress, and he concluded from this small trial that "the results are inconclusive and not very encouraging." Dr. T. N. Kelynack sent me a preliminary note by Dr. W. G. Kinton, medical superintendent of the Mount Vernon Hospital, reporting no definite reactions or harmful effects, and no change in the temperature curve definitely attributable to the treatment. The patients, with one exception, had improved in weight and general condition, but it was difficult to say how much was due to the drug and how much to general hygienic conditions. Hæmorrhagic cases were found to be least suitable, while "extensive moderately quiescent lesions with a tendency to fibrosis seem to have done well," but "a more extended experience is necessary before expressing a general opinion on its value." Dr. Marcus Paterson, of the Colindale Hospital for advanced pulmonary cases, reports 8 cases, 1 definitely improved while under treatment, 1 thinks he has improved, 3 stationary, 2 became worse (? cause), and 1 died while under treatment, probably due to the sodium morrhuate without the temperature being affected. A further report is promised later.

I am exceedingly indebted to Prof. Lyle Cummins for arranging the most extensive trial of sodium morrhuate in pulmonary tuberculosis yet undertaken through the medical officers of the King Edward VII. Welsh National Memorial Association for the Prevention, Treatment, and Abolition of Tuberculosis, and for sending me their reports, of which the following is a summary. Dr. H. A. Ross treated 11 cases, 3 improved, 5 not improved, and 3 worse, 1 much worse, and is uncertain whether the improvement in a few cases was psychic or not. Dr. R. Owen Morris has used the treatment in six advanced cases without any benefit, and in four moderately early cases with tubercle bacilli in their sputum, in two of whom it became negative under the treatment, but as they were doing well before he thinks they would have done equally well without the sodium morrhuate. Dr. D. A. Powell has treated three lung cases, which do not permit of any expression of opinion, and four surgical cases with definite improvement in two, and no change in the other two. Dr. D. W. Fenwick Jones treated 18 cases and found it harmless and of no benefit, and Dr. H. E. Watson in about eight cases, and found no definite effects from the drug. Thus no definite results have been obtained in the small series of cases of the above medical officers, but the two following reports relate to larger numbers and record some interesting experience. Dr. T. Williams has treated 30 cases for three months with results not different from hospital and hygienic treatment. Two chronic fibroid phthisis and one hilum case "made marked improvement after the first dose and have continued to make satisfactory progress," and one sinus cervical adenitis case "made very rapid improvement." Local reactions, occasionally followed by a rise of temperature, but not the malaise due to an overdose of tuberculin, were observed, but no increase of physical signs suggesting a focal reaction. With a clear light amber-coloured fresh solution general reactions can be avoided and the local reactions controlled and the treatment can be regarded as safe in all cases, and all tuberculous cases give a definite local reaction with 0·1 c.cm., but chronic bronchitis gave none with 1 c.cm., so it may have diagnostic value if other diseases produce none. He concludes: "In comparison with tuberculin treatment sodium morrhuate has the advantage in that the dose is easily determined by the local reaction, general reactions can be more easily avoided, are much less severe, and it can be used for cases where tuberculin is contra-indicated. The results are at least equal to those following tuberculin."

Dr. Charles Lloyd, of the Tuberculosis Institute, Lampeter, reports on a trial in about 140 cases, the most extensive I know of, including dispensary patients, and writes: "I find it difficult to give definite proof of the value of sodium morrhuate in the treatment of tuberculosis, still I feel confident that it does, in some way, assist the natural defensive mechanism." He found temperature reactions occurred very irregularly and were most evident in advanced or bad cases, and the pulse may be slower or unchanged, and he adds: "There is nothing very definite that one can point to, one way or the other, and one must rely on general impressions. I have given sodium morrhuate to about 140 cases, early, intermediate, and late, pulmonary and non-pulmonary. It has certainly failed in many cases of advanced disease, in the 'young adult type' and in cases with poor resistance, but I feel it has been of real help in many others." He proceeds to give notes of two cases which responded particularly well, including healing of laryngeal trouble, and states he has had several similar cases, and concludes: "I have found the preparation quite harmless in the doses recommended, but have never given more than 0·3 c.cm. to a bad case. It leaves much to be desired, but I must say it has given me better results than anything else I have yet tried."

The last report to reach me is from Dr. E. G. Fenton, of Limerick, who arranged for trials of sodium morrhuate in phthisis in February last, and sends notes of two bad cases treated by Dr. P. J. Holmes with remarkable improvement, and seven by Dr. A. Humphreys, mostly in dispensary practice, all of whom improved, two gaining 1½ st. in weight, once more showing that the drug can give good results in the absence of the advantages of sanatorium treatment.

SUMMARY OF TRIALS IN PULMONARY TUBERCULOSIS.

I have now summarised all the reports which have reached me of tests in phthisis, as far as possible quoting the conclusions of the experts, from which the following conclusions may be drawn. In the first place, the trials of sodium morrhuate in a few unfavourable cases, not improving in spite of sanatorium treatment, have not yielded any striking results, and they lend no support to Dr. Boelke's statement that "sodium morrhuate alone has given me the most uniformly successful results" in all forms and stages of tuberculous disease. Secondly, the cases recorded by Dr. Boelke and the reports of Drs. Hume, Lloyd, and Fenton prove that the drug is capable of effecting remarkable improvement, including complete disappearance of tubercle bacilli from the sputum, in a certain proportion of advanced cases, some of whom had resisted sanatorium treatment, while in earlier cases in dispensary and general practice very favourable results may be obtained by prolonged treatment for six months or more. Thirdly, small subcutaneous injections of clear freshly prepared solutions, the increase of the doses being regulated by the local reactions as described by Boelke, have proved uniformly safe in the hands of experienced workers, especial caution being used in hæmorrhagic and acute types of the disease. I therefore think that the method may now be safely used with advantage on a larger scale in tuberculosis dispensaries in the many early cases, who often have to wait for months before gaining admission to sanatoria; and I would also venture to suggest that sufficient evidence of possible benefit without material risk in early cases is now available to justify the trial of the drug in this class of case in sanatoria, in addition to the unfavourable ones hitherto almost exclusively selected for the trials, ample control cases being available for comparison whenever possible, the injections being continued twice a week for at least six months in doses not over 1 c.cm. in view of Dr. Hume's experience. If my contention is correct that sodium morrhuate induces the destruction of the tubercle bacilli in the body, as evidenced by the breaking up and disappearance of the organisms in the sputum, as it certainly does in the case of the lepra bacillus, its use should supplement in an important manner the building up of tissue resistance by sanatorium methods, and might quite possibly lessen the still lamentable proportion of recovered sanatorium cases, who succumb to the disease within a few years of their discharge from these very valuable institutions.

TRIALS OF SODIUM MORRHUATE IN SURGICAL TUBERCULOSIS.

Surgical tuberculosis cases present the advantage of allowing focal reactions at the site of the disease being more closely observed, so the following slightly abridged reports of the Carshalton and Fazakerley trials are of great interest, as they extended over more than a year and are being continued. Dr. Edna Mawson and Dr. Fry, in their reports from Carshalton, note that in seven cases new lesions developed while under treatment, nearly all tuberculous abscesses, and in three they "cleared up remarkably quickly when the treatment was stopped." Slight local reactions at the site of injection occurred in about one-third of the cases; focal reactions in the form of temporary increased discharge from sinuses were common during the first few weeks of treatment, but general febrile reactions were not met with. In a case of lupus a local application produced a violent inflammatory reaction, followed by rapid healing of three ulcers on the face. The majority of the patients increased in weight, even when no local improvement was noticed, and the general condition also improved in more than half the cases; but it is not possible to say how far this was due to the drug, although as most of the patients were under 16 it is considered doubtful if the psychological factor would enter in. A lasting decrease of the tuberculous lesions with sound healing resulted in about one-third of the cases, most marked in those with multiple superficial lesions or of the smaller joints, "but as these tend to do well it is difficult to judge the extent of the improvement due to the injections." Not much effect was produced in four cases of chronic lupus, and the results in sinus cases of long standing have been disappointing. (The frequency of secondary infections complicates this class of case.) The general conclusion arrived at is that "the improvement in about one-third of the cases treated suggests further trials."

Dr. C. Rundle, medical superintendent of the isolation hospital at Fazakerley, Liverpool, has kindly sent me a most valuable report on 24 cases of surgical tuberculosis, all febrile bed-fast cases, treated with sodium morrhuate with the help of Mr. J. T. Morrison and Dr. W. Crane, including disease of the spine, sacro-iliac, hip, knee, and elbow-joints, of ribs, tarsus, carpus, ulna, tibia, and radius bones, of glands, skin, and abdomen, and in 20 of them one or more discharging sinuses were present, while five had in addition pulmonary lesions with positive sputum. The only harm seen after a large number of injections was hæmoptysis and increased sputum with appearance of bacilli in it after an intravenous dose in a case of pulmonary tuberculosis (only subcutaneous doses are now being used), while one case of multiple bone lesions in a dying condition before treatment succumbed within three months, these being the only unfavourable results.

Local irritant reactions at the site of injection in the form of swelling, tenderness, and stiffness occurred in 60 per cent. of the cases after various doses and without any regularity. Focal reactions at the seat of disease were observed in 75 per cent., all those with pulmonary disease showing them in the form of increased harshness of the breath sounds, cough, and quantity of sputum passing off in 60 to 72 hours, and in all sinus cases as increased discharge, sometimes sanious, reaching its maximum in about 18 hours and passing off in 72 hours, while two genito-urinary cases had rigors and hæmaturia after injections. In 50 per cent. general reactions of varying intensity were observed in the form of headache, "cold in the head," general malaise, raised temperature, and rapid pulse. Immediate improvement following any general reaction was not sufficiently marked to be noteworthy.

RESULTS.

All the cases having been febrile, "30 per cent. of those treated have now normal or subnormal temperatures, 25 per cent. are still febrile and show no alteration in temperature, and the remainder (45 per cent.) are improving, but have not yet reached normal. Fifty per cent. of the cases show a decided improvement. In 20 per cent. there is some improvement. The remainder are in statu quo or worse. Fresh foci developed in 8 of the 24 cases treated. The occurrence of focal reactions, the development of fresh foci, and the changes occurring in the majority of the lesions, point to a specific action." All the cases had been under treatment for a considerable time, and Dr. Rundle adds that the treatment "should be used with extreme care where vital organs are concerned."

These important trials of sodium morrhuate in surgical tuberculosis, although still leaving much to be desired, are not without promise, and the officers of both institutions are anxious to continue and develop them. The results already obtained, and the important confirmation by the Fazakerley workers of my views that the drug has a specific action on tuberculous tissues, somewhat similar to that of tuberculin, the opinion of Dr. T. Williams that the preparation may safely be used in phthisis cases in which tuberculin is contra-indicated, together with the conclusion of Dr. Lloyd, from a unique experience of the drug in pulmonary tuberculosis, that it is both harmless and has yielded him better results than any other line of treatment, appear to me to fully confirm the statement I made in my first paper of February, 1919, that the results then obtained in India "justify me in bringing sodium morrhuate to the notice of the medical profession, to allow of the prolonged trials by many skilled workers which will be necessary before its permanent value, if any, can be decided, and the indications and contra-indications for its use worked out." That is still my position, and I only wish to add some suggestions for further lines of investigation, some of which are being undertaken by experts, who are already convinced that my methods are not without some promise of eventual greater success than at present.

Ethyl ester morrhuate is being tried on account of its greater stability and slower absorption than sodium morrhuate, which gets over the disadvantages of the instability and the necessity of making up fresh solutions of the latter, while the former is likely to produce less severe reactions; and Dr. Muir has recently reported to me that he found the ethyl ester more effective in tuberculous glands than the sodium salt.

Cod-liver oil intramuscularly, diluted with an equal quantity of pure olive oil to prevent pain, is also being tried, first, because it will retain vitamin A, which is absent from the morrhuates, and secondly, because there is some evidence that the oil itself has a definite injurious effect on tubercle bacilli in vitro, which is wanting in the morrhuates, indicating that some important substance is lost in the preparation of the latter. Thus, H. E. Kirschner, in a recent article [22] deploring the neglect of cod-liver oil in tuberculosis at the present day, states that it was a folk remedy for centuries, and has been used for a century past in tubercle of children, having a food value far in excess of other fat foods, because all but 14 per cent. of its fatty acids are in the easily absorbed and assimilated unsaturated form, and its vitamin fat-soluble A potency is 250 times that of butter, while it also aids absorption and deposition of calcium salts, which are deficient in tuberculosis and play an important part in the healing processes.

Effects of cod-liver oil on acid-fast bacilli in vitro were demonstrated in 1909 by Willian and Forsyth,[23] for when they were mixed and incubated at 37° C. for several months the organisms were rapidly decolorised by the carbol-fuchsin method, while recently H. B. Campbell and Jean Kieffer [24] have obtained very similar results, for freshly extracted cod-liver oil, added to glycerine potato medium on which tubercle bacilli were cultivated, rapidly inhibited the growth of the bacilli and led to their becoming granular, and, still more important, they lost their infectivity to guinea-pigs, although control tubes with cotton-seed oil in place of cod-liver oil only slightly retarded the growth.

The advantage of adding 10 per cent. creosote or 3 per cent. iodine as an antiseptic to ethyl hydnocarpates in the treatment of leprosy, as shown by Muir, suggests the trial of such additions to ethyl morrhuate in tuberculosis, in which both substances have been much used either orally or by inhalation, and other combinations of morrhuates with remedies with a reputation in tuberculosis will suggest themselves.

ALTERNATING SODIUM MORRHUATE AND TUBERCULIN INJECTIONS.

Lastly, I have long had in mind the possible advantages of combining tuberculin and morrhuate treatment on the lines by which Muir, at my suggestion, obtained beneficial results from using acid-fast bacillus vaccines with hydnocarpates in leprosy, for if by tuberculin injections an increase of the resisting powers of the patient to the toxins of the tubercle bacillus can be effected, it is quite possible that the subsequent use of morrhuates to break down that organism in the system may become both safer and more effective. During a visit to the Fazakerley Hospital a few months ago I had the privilege of discussing this and other questions with Dr. Rundle and his colleagues, since which they have been testing the suggestion, and have just reported that the alternate use of these two substances in a considerable number of cases suggests that it may prove to be a promising method, as indicated by the following three cases showing remarkable improvement.

"One had lesions in hip and rib, both with sinuses and abscesses in the soft tissues. In this case the sinuses and abscesses are healed, the temperature is subnormal, and there are no signs of active disease. It has to be stated that a portion of the rib was excised. The second had hip disease with several discharging sinuses; he developed a focus in the tibia; this was excised, as was also a focus which appeared in the sternum; he also got an abscess in the supraspinous fossa. In this case there is now only one small sinus at the hip with very scanty discharge. The discharge is lessening, and the sinus is contracting. The third case had extensive pulmonary disease, with cavitation and copious sputum; he had also an active focus in the spine. The pulmonary condition is very much improved, and the spine lesion is quiescent." Further results of this combination will be awaited with interest, as it appears to open up further possibilities of the useful application of the new methods.

CONCLUSION.

In conclusion, it is of interest to note that, while chaulmoogra oil derivatives have proved of great value in the treatment of leprosy, placing in our hands a far more effective means of dealing with that scourge than we formerly possessed; on the other hand, the morrhuates in small subcutaneous doses have proved both safer and more effective in tuberculous disease; confirming in a remarkable manner the century-old empirical opinions regarding both oils, just as our two great specifics for tropical disease are derived from cinchona bark and ipecacuanha root discovered by the aboriginal Indians of South America. The growth of medical science has vastly improved on the old empirical methods by furnishing us with soluble compounds of the active alkaloids quinine and emetine, the latter of which was, however, known to science nearly a century before I was fortunate enough to establish its great value in amœbic disease. In a similar way my Calcutta investigations have now demonstrated the value of the application of the same principle in obtaining the active portions of chaulmoogra oil in forms suitable for injection in leprosy, and those of cod-liver oil in tuberculosis; and I trust the evidence I have been able to bring forward to-day, thanks solely to the great kindness of a number of tuberculosis experts in testing my methods, to whom I cannot sufficiently express by obligations, will suffice to indicate possibilities of even greater advances through further research, a wide field for which has now been opened up. Invaluable as are the effects of sanatorium treatment, no one can doubt that the ultimate results still leave ample room for improvement, and perhaps we have been a little too much inclined to rest on our oars and to make insufficient efforts to find a more active and less costly remedy for the white man's scourge. If my attempts in this direction leads more tuberculosis experts to pursue this line of investigation, I am sanguine enough to hope that some real advance will accrue before very long, in which case my somewhat daring excursus into a field outside that in which my life's work has almost entirely lain hitherto, will be more than justified, and the investigations into the treatment of leprosy and tuberculosis, which occupied the last few years of my active service in India, may yet prove to be a contribution of some value to general medical science.

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ON THE ANTIBACTERIAL POWER OF EGG-WHITE.

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THE hen's egg forms one of the staple articles of our food. As it is marketed it does not reach the consumer until many days after it is laid, but if eggs from a shop window are examined bacteriologically it is found that, as a rule, they are sterile. Now, the contents of the egg are highly albuminous, and both white and yolk have been used in the laboratory, after being treated in various ways, as culture media for bacteria. It is clear, therefore, that ample foodstuff exists in the egg for the development of microbes, but in the ordinary course of events bacteria do not invade the egg for a long time after it is laid and exposed to infection. The question arises as to what is the protective mechanism which prevents infection. Our first thoughts run at once to the hard shell with which it is encased, and many experiments have been done on the permeability of the shell to infective bacteria.[1,2,3,4] Roughly it can be said as a result of these experiments that many bacteria can readily pass through the shell, although by mere mechanical means it delays the infection of the underlying contents of the egg.

Laschtschenko in 1909[5] and Rettger and Sperry in 1912[6] have shown that egg-white has antibacterial properties, so that when certain bacteria are planted into undiluted egg-white their numbers diminish, in some cases rapidly and in some cases slowly. These observers, however, did not clearly demonstrate the enormous potency of the antibacterial action of egg-white, nor was there any connexion made between this antibacterial action and the similar action of the tissues and secretions of fowls and other animals.

The authors[7,8,9] have shown that egg-white, in common with almost all the tissues and most of the secretions of the animal body, possesses the property of very rapidly dissolving a large proportion of the bacteria which are to be found in the air and with which the egg would be subject to infection. They have shown that this bacteriolytic power of egg-white is due to a ferment-like substance which they have termed "lysozyme," and that the lysozyme of egg-white is apparently identical with that of human tissues and secretions and even of vegetable tissues, for when a strain of a susceptible bacterium was made resistant to the lysozyme of egg-white by growing it in a very high dilution of this substance, it was quite as resistant to the lysozyme contained in any other tissue or secretion as it was to the lysozyme of egg-white. It would appear, therefore, that the bacteriolytic action of egg-white is a property not peculiar to this substance, but possessed by it in common with many other living substances and their products.

Action of Egg-white on a Susceptible Bacterium.

One of us (A. F.) isolated a large Gram-positive coccus which he called the *Micrococcus lysodeikticus*, on account of its usefulness in the demonstration of the lytic substance contained in the various tissues and secretions. When a thick suspension of this microbe in salt solution is mixed with a 1 per cent. egg-white solution, and the temperature of the fluid is kept about 50° C., there is complete clearing of the bacterial suspension in about 30 seconds and a microscopical examination of the fluid shows that the cocci have practically disappeared, being merely represented by a few "shadows" and many granules. The change is identical with that described and figured by the authors in connexion with the bacteriolytic power of tears. Again, if a drop of egg-white is placed on the surface of a culture plate which is covered with an opaque yellow sheet of growth of this microbe it will be seen that, where the egg has been superposed, the whole of the thick sheet of culture has been dissolved within one minute, if the temperature is kept at over 30° C. (The lytic action is slower as the temperature is reduced, exactly as we have shown with other secretions.) From these experiments it is obvious that the lytic action on a microbe, such as the *Micrococcus lysodeikticus*, which is very sensitive to lysozyme action, is a very powerful and rapid one, and this is further borne out when serial dilutions of egg-white are made in normal saline and to each dilution is added a measured quantity of this sensitive coccus. When these mixtures are incubated at 37° C. for 24 hours, it will be found that there will be evident lysis of the cocci in a dilution of the egg-white of 1 in 50,000,000. So far as a microbe of this type is concerned, therefore, the antiseptic action of egg-white is much stronger than that of any of the chemical antiseptics.

Bacteriolytic Power of Different Kinds of Egg-white.

Eggs which had not been laid more than a few days were obtained from the hen, thrush, wagtail, and moor-hen. The white from each of these was separated and the bacteriolytic power on the susceptible test microbe was estimated by making serial dilutions of each and adding to each dilution the same quantity of the test microbe. After incubation for one hour at 45° C., results were obtained which are shown in Table I.

TABLE I.—*Bacteriolytic Power of Egg-white from Different Species of Bird.*

Species of egg-white—	Lysis observed after one hour at 45° C. in a dilution of egg-white of 1 in (in thousands)—										
	2	4	8	16	32	64	128	256	512	1024	2048
Hen	+	+	+	+	+	+	AC	±	±	±	±
Thrush	+	+	+	±	Tr	0	0	0	0	0	0
Wagtail ..	+	+	AC	Tr	0	0	0	0	0	0	0
Moor-hen ..	+	+	±	Tr	0	0	0	0	0	0	0

+ = Complete lysis. ± = Partial. AC = Almost complete. Tr = Trace.

It will be seen from Table I. that there are marked differences in the lysozyme titre of the different species, the hen's egg white being much stronger than any of the others. Of course, it is possible that with a different test microbe the relative powers of these different eggs might be changed, but this experiment clearly shows that egg-white from different species of birds varies in its lytic power towards the same bacterium. The egg-white from a large number of hens' eggs, some brought direct from the country within two days of being laid and others bought in the shop nearest the laboratory, has been tested, and although there were slight differences in the bacteriolytic titre of different eggs, there was never any difference between two hens' eggs, comparable to that between hen's egg white and that of the other birds tested.

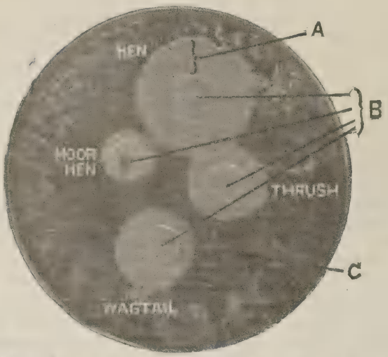
The same difference between the antibacterial power of hen's egg white and that of other birds can be demonstrated more dramatically in the following manner. An agar culture plate is taken and small portions of the agar are punched out, leaving holes into which are put equal quantities of the egg-white from different birds. These portions of egg-white are covered with several layers of agar, added, when liquid, at a temperature of about 50° C., each layer being allowed to solidify before the next is applied. In this way the egg-white is completely buried in the culture medium, and finally the whole surface of the culture plate is covered with a fresh layer of melted agar, and when this has solidified the surface is thickly planted with the *Micrococcus lysoideikticus* and the plate is incubated. The resultant growth is shown in Fig. 1, from which it will be seen that there is a definite area of complete inhibition of growth around the spots in which the different kinds of egg-white were embedded, but that the inhibitory area around the hen's egg white is much larger than that around the egg-white of any of the other birds tested. But it is not only the eggs of birds which have this lytic and inhibitory power on bacteria. The eggs of a fish (pike) were tested both by adding the eggs to a suspension of bacteria, which was promptly cleared, and by embedding the eggs in an agar plate the surface of which was subsequently planted with the coccus. In this latter case there was evident the same inhibitory zone, which was manifest in the case of the bird's egg white. (Fig. 2.)

The relative bactericidal action of hen's and duck's egg white was tested on a series of fæcal streptococci. Serial dilutions of the egg-white were made in normal saline solution, and 10 c.mm. of each of these dilutions were mixed with the same volume of a 1 in 1,000,000 dilution of a 24 hours' broth culture of the coccus, incubated for one hour at 37° C. and then planted out on agar. The resulting growth showed that there was a marked bactericidal action in every case, and that there was no essential difference between the bactericidal power of hen's and duck's egg white. As a rule, there appeared to be a more powerful bactericidal action of the hen's egg in the more concentrated solutions, but in the dilutions over 100 the lethal effect of the duck's egg appeared to be rather more marked.

Properties of the Bacteriolytic Substance.

The properties of the lysozyme in animal tissues and secretions, which is identical with that in egg-white, have already been described by us. It is not destroyed by drying, as is shown by the fact that commercial dried egg-albumin, which before it reaches the laboratory has in all probability been dried for many months, retains its bacteriolytic power to a marked degree. (Definite bacteriolysis of the coccus was observed after incubation for 18 hours at 45° C. in a dilution of the dried egg-albumin of 1 in 80,000,000.) From egg-white, also, the bacteriolytic agent can be precipitated by alcohol, and if this precipitate be removed and dried the lysin can be extracted from the precipitated proteins by normal salt solution. Little or none of the lytic agent appears to be destroyed by alcohol. The authors have shown that when pike's eggs are exposed to the action of various fluids, alcohol, ether, chloroform, xylol, and toluol, for several months their bacterio-inhibitory power is not altered.

FIG. 1.

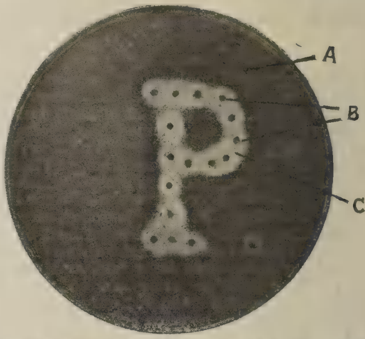


Inhibition of bacterial growth by egg-white from different species of birds. A, Zone of complete inhibition of growth. B, Egg-white embedded in agar. C, Opaque sheet of growth of *M. lysodeikticus*.

Antibacterial Power of Egg-yolk.

Rettger and Sperry[6] have stated that egg-yolk has no antibacterial power. When, however, it is tested on a very sensitive organism like the *Micrococcus lysodeikticus* which we have used, there is manifest a slight but definite bacterio-inhibitory, bactericidal, and bacteriolytic power. If some of the egg-yolk is embedded in an agar plate and the surface planted with *M. lysodeikticus*, it is found that there is no growth of the coccus immediately over the yolk, but the very large area of inhibition which is so striking when egg-white is used is not here reproduced. By explanting experiments it can be clearly demonstrated that some bactericidal action takes place, and by microscopic examination of the cocci after they have been acted on by egg-yolk it can be seen that there has been a definite lytic action.

FIG. 2.



Inhibition of bacterial growth by eggs of a pike. A, Opaque sheet of growth of *M. lysodeikticus*. B, Pike's eggs embedded in agar. C, Zone of complete inhibition of growth.

Does Egg-yolk Interfere with the Bactericidal Action of Egg-white?

This was tested on a very sensitive organism (*M. lysodeikticus*), and it was found that the antibacterial power of egg-white was not interfered with when it was mixed with an equal volume of the yolk. When, however, the bactericidal power was tested to a less sensitive organism, *Streptococcus fæcalis*, quite a different result was obtained. One volume of egg-white was mixed with one volume of a suspension of streptococci, and to a similar mixture one volume of the yolk was added. After incubation for one hour these two mixtures were plated out on agar along with one volume of the coccal suspension (to show the number of cocci implanted in the egg mixtures) when it was found that the egg-white alone destroyed almost all the cocci, but when the yolk had been added there was little or no bactericidal power manifest. This result agrees with the findings of Rettger and Sperry.[6]

It would appear, therefore, that where a very susceptible microbe is concerned the yolk has in itself some bactericidal power and it does not interfere with the antibacterial action of the white, but when the test microbe is less susceptible, the yolk has a definite inhibitory action on the bactericidal power of the white.

Action of Egg-white on Different Types of Micro-organisms.

The inhibitory action of egg-white on the growth of air-borne bacteria can readily be shown by taking two agar plates, coating one of them with a thin layer of egg-white, and exposing them to the air of the laboratory for an hour, after which they are incubated. It will be found that on the control plate there are very many colonies of a great variety of microbes, whereas on the plate which was coated with egg only a few colonies develop, and almost all of these are moulds and not bacteria.

The bacteriolytic power on the common air-borne bacteria was tested by making suspensions of 100 strains of such bacteria isolated haphazard, adding to these an equal volume of a 1 per cent. solution of egg-white and incubating at 45° C. The lysis was noted by the partial or complete clearing of the opaque bacterial suspension. It was found that after 24 hours' incubation there was evidence of lysis in 75 of the 100 bacteria tested. Some strains of bacteria were completely dissolved in a few minutes, while others were only partially dissolved after 24 hours. The inhibitory and lytic action of egg-white on air-borne bacteria probably explains the fact that egg-white exposed to the air remains for a long time uncontaminated. The antibacterial action of egg-white was investigated also as regards bacteria isolated from the human body.

The bacteriolytic power was tested by mixing equal parts of suspensions of the various bacteria with dilutions of egg-white and incubating the mixtures at 45° to 50° C., after which it was noted whether the suspension had cleared. The results obtained are set forth in Table II.

TABLE II.—*Bacteriolytic Action of Egg-white on Organisms Derived from the Human Body.*

Microbe tested.	Dilution of egg-white used.	Bacteriolysis observed.
Staphylococcus	1 in 100	Partial or none.
Streptococcus pyogenes ..	,,	Trace or none.
,, *fæcalis* ..	,,	Complete or partial.
Pneumococcus	1 in 10	None or a mere trace.
Meningococcus	,,	Almost complete.
B. anthracis	1 in 100	Partial.
B. pyocyaneus	,,	,,
B. typhosus	,,	None.
B. paratyphosus A and B	,,	Partial.
B. aertrycke	,,	None.
B. dysenteriæ (Shiga) ..	,,	,,
,, (Flexner)	,,	Partial.
V. choleræ	,,	None.
V. paracholeræ	,,	,,
B. pestis	,,	Trace.
B. diphtheriæ	1 in 10	Partial.
B. hoffmannii	,,	None.
B. acidophilus (of mouth)	,,	,,
Streptococcus mutans ..	,,	Partial.

Bactericidal experiments were also carried out. Suitable dilutions of broth cultures of the organisms were made and mixed with equal volumes of serial dilutions of egg-white. After incubation for one hour at 37° C. these mixtures were plated out on agar. It was found that egg-white had a marked bactericidal power on staphylococcus, *Streptococcus fæcalis*, and *B. coli*, while a definite but less powerful action was manifest on *B. typhosus*, the paratyphoid bacilli, and the cholera vibrio. The results are shown in Table III.

TABLE III.—*Bactericidal Action of Egg-white on Some Pathogenic Organisms.*

Test organism.	Number of colonies obtained after treatment of the bacterium with egg-white in a dilution of 1 in—							
	2	4	8	16	32	64	128	Control.
Staphylococcus	17	19	50	48	72	165	254	271
Streptococcus fæcalis ..	1	16	79	120	175	231	252	317
B. coli	14	16	39	41	61	98	149	257
B. typhosus	16	18	25	31	42	39	48	51
B. paratyphosus A ..	33	41	67	95	88	116	99	113
,, B ..	31	45	58	81	91	86	91	89
Vib. choleræ	32	33	45	54	50	60	54	57
B. dysenteriæ (Flexner)	62	60	71	64	74	71	68	72
B. pestis	54	57	61	51	62	63	59	60

As the bactericidal action of egg-white on some of these organisms was not very powerful, experiments were carried out to see if any bacterio-inhibitory power was present. Two series of tubes were prepared, one containing 0·5 c.cm. broth, 0·1 c.cm. egg-white, and 0·5 c.cm. of a 1 in 1,000,000 dilution of a broth culture of the test organism, and the other 0·6 c.cm. broth and the same amount of the bacterial culture. After three and six hours' incubation at 37° C. 20 c.mm. from each of the tubes was planted out on agar plates and the colonies counted. The organisms tested were *Staphylococcus aureus*, *Streptococcus pyogenes*, *B. coli*, *B. anthracis*, and *B. typhosus*, and it was found that there was marked inhibition of growth in every case.

The bacteriolytic action on *B. coli* was tested on 12 strains, some hæmolytic and the others non-hæmolytic. After incubation for 18 hours in a 1 in 10 dilution of egg-white it was found that in three cases there was almost complete clearing of a thick suspension of the bacilli, and with six other strains there was a partial clearing, while there was no apparent change with three strains. There appeared to be no difference in respect of their susceptibility to lysis between the hæmolytic and the non-hæmolytic varieties of *B. coli*.

The antibacterial action of egg-white on the streptococcal group calls for special comment. The bacteriolytic action of a 1 in 10 solution of egg-white was tested on 80 strains of streptococci of various types isolated from sputum, naso-pharynx, urine, and fæces, and it was found that all the strains were to some extent susceptible to the lytic action of the egg-white, the results obtained varying from a partial clearing of the suspension to absolute clarification and disappearance of the organisms.

The action of egg-white was also tested on a large number of strains of *Streptococcus fæcalis*. Preliminary experiments had shown that this organism, which is remarkably resistant to many adverse influences such as heat and drying, was comparatively readily dissolved by the lysozyme contained in egg-white. Sixteen strains which had been proved by cultural and serological methods to be *Streptococcus fæcalis* were grown on agar, suspensions of the cocci were made in saline, and to these suspensions were added equal volumes of a 2 per cent. solution of egg-white. After six hours' incubation at 45° C. there was an almost complete clearing of the streptococcal suspensions. Many other strains have since been tested, and the result has been the same in every case.

The susceptibility of some of the fæcal organisms, and especially of the fæcal streptococci, to the bacteriolytic action of egg-white led to an investigation as to whether egg-white taken by the mouth would have any effect on the streptococci of the intestine. It was first necessary, however, to determine whether the lysozyme of egg-white would survive peptic and tryptic digestion.

Effect of Peptic Digestion on the Lysozyme of Egg-white.

Two mixtures were made as follows :—

1. Egg-white, 1 in 1000, 3 c.cm. +0·25 c.cm. normal saline.
2. Egg-white, 1 in 1000, 3 c.cm. +Pepsin (1 in 10) 0·1 c.cm. +HCl (n/20) 0·15 c.cm.

These were incubated at 37° C. to allow of the digestion of the egg-white in tubes which contained the complete digestive mixture. After two hours, when the digestion appeared to be complete, the contents of tube 2 were neutralised with n/20 NaOH and the volumes were equalised; the contents were then titrated for the presence of lysozyme by making serial dilutions, and adding to each of these a measured quantity of the test coccus (*M. lysodeikticus*). The results obtained showed that peptic digestion had not diminished the bacteriolytic power.

Effect of Tryptic Digestion on Lysozyme.

This was tested in the same way as was peptic digestion. Tubes were put up containing active trypsin and trypsin which had been rendered inert by boiling. The digestion of the egg-white was considered complete when there ceased to be any clouding of the test mixture on boiling. On titrating the digested egg-white for lysozyme it was found that it gave the same titre as the control tubes, which contained egg-white incubated with saline solution and inactivated trypsin. It was evident, therefore, that tryptic digestion had no effect on the lysozyme contained in egg-white.

Effect of the Ingestion of Egg-white on the Streptococcal Content of the Fæces.

An individual was chosen for this experiment whose fæces had been examined many times and always showed a large preponderance of streptococci in the cultures. Cultures of the fæces were made daily on blood-agar plates, and the relative number of streptococci and *B. coli* were counted. From the fourth to the twelfth day of the experiment the white of four hen's eggs was taken, two in the morning two hours before breakfast and two at night four hours after the last meal. The results obtained are shown in Table IV.

TABLE IV.—*Effect of the Ingestion of Egg-white on the Intestinal Flora.*

Day of expt.	No. of colonies counted.		Relative No. of colonies.		Day of expt.	No. of colonies counted.		Relative No. of colonies.	
	B.c.	St.	*B.c.*	St.		*B.c.*	St.	*B.c.*	St.
1	62	419	1	7	10*	733	120	6	1
2	37	485	1	12	11*	363	88	4	1
3	48	392	1	8	12*	480	694	1	1·4
4*	67	307	1	5	13*	380	406	1	1
5*	1022	255	4	1	14*	137	886	1	7
6*	1273	214	6	1	15*	272	566	1	2
7*	615	52	12	1	16	115	675	1	6
8*	622	198	3	1	17	36	644	1	18
9*	120	114	1	1	18	52	554	1	11

B.c. = *B. coli*. St. = Streptococci.
* Indicates the days on which egg-white was taken.

It will be seen that following the ingestion of the egg-white there was a very considerable change in the relative numbers of *B. coli* and streptococci, the latter diminishing very markedly in proportion. This change, however, seemed to be maintained only for nine days, when the condition returned to its original state.

It is possible that it was merely the addition of so much proteid to the diet which affected the flora, but it is probable that part, at least, of the change was due to the antibacterial action of the egg-white on the streptococci. The fæces were tested daily for lysozyme by drying them with acetone (which does not destroy lysozyme), and then adding a pellet of the dried fæces to a suspension of our sensitive test organism (*M. lysodeikticus*). The fæces from the third day to the end of the experiment contained a lytic substance to this organism, although before the ingestion of egg-white repeated examinations had failed to reveal the presence of any lytic substance.

It was thought that possibly a strain of streptococci had developed in the intestine which was resistant to the lysozyme of egg-white, but tests made on the streptococci isolated at the end of the experiment showed that they were all capable of being dissolved by egg-white. The tests were, however, not very accurately quantitative, and as the authors have shown it is quite easy to develop strains of bacteria resistant to the lytic action of egg-white and other lysozyme-containing substances by growing them for 24 hours only in the presence of a small amount of lysozyme, it is very probable that strains of streptococci developed which were slightly more resistant to the lytic action of the egg-white and so were able to propagate themselves freely even in the presence of a small amount of lysozyme in the intestine.

Clinically we have recommended the ingestion of egg-white to a considerable number of patients who had a large number of streptococci in the fæces and who suffered from feelings of lassitude, headache, &c., which so often accompany a streptococcal intestinal flora. In most cases they have reported a very definite temporary improvement in their symptoms. This may, of course, have been merely a psychological effect, or it may have been a temporary action on the streptococci.

Antiseptic Action of Egg-white in Blood.

The antiseptic action of egg-white in blood was tested in the same manner that one of us (A. F.)[10] has described in connexion with chemical antiseptics. It was found that whereas egg-white, in marked contrast to the chemical antiseptics, has no destructive effect on the leucocytes, it has considerable inhibitory or lethal effect on some of the bacteria. Egg-white, mixed with blood so that the resulting concentration is 1 per cent. of egg-white, will completely inhibit the growth of *Streptococcus fæcalis*, and allow of only a very scanty development of organisms like staphylococci and *B. diphtheriæ*.

The fact that egg-white mixed with blood has definite antibacterial properties led us to investigate the result of injecting this substance into the circulation. A rabbit weighing 2970 g. was injected intravenously with 20 c.cm. of a 10 per cent. solution of egg-white (equal to 2 c.cm. of undiluted egg-white). No ill-effects followed the injection. Blood was taken from the rabbit before and at intervals after the injection, and the serum was titrated for bacteriolytic power to our test coccus. The results are shown in Table V.

TABLE V.—*Lysozyme Content of Rabbit's Blood Serum After Intravenous Injection of 20 c.cm. of 10 per cent. Egg-white.*

Time blood sample taken.	Dilution of serum in which complete lysis of the cocci was observed after 1 hour's incubation at 45° C.
Before injection	Not complete in undiluted serum.
Immediately after injection ..	1 in 600
5 minutes ,, ,, ..	1 ,, 400
15 ,, ,, ,, ..	1 ,, 200
30 ,, ,, ,, ..	1 ,, 80
1 hour ,, ,, ..	1 ,, 50
2 ,, ,, ,, ..	1 ,, 40
3 ,, ,, ,, ..	1 ,, 10

Egg-white solution when titrated gave complete lysis in 1 in 64,000. If we assume that the total blood content of the rabbit was 1/13th of its body-weight, this would give us a blood volume of 228 c.cm. The amount of egg-white injected, therefore, would give a concentration in the rabbit's blood of 1 in 114. Now, the bacteriolytic titre of the serum immediately after injection was 1 in 600, which, when multiplied by the dilution of egg-white in the blood, represents a dilution in the rabbit of the egg-white injected of 1 in 68,400. This closely corresponds with the bacteriolytic titre of the egg-white, which was found to be 1 in 64,000. It is evident, therefore, that for a short time the bacteriolytic power of the egg-white injected into the rabbit is maintained at its full strength. After about 15 minutes it is reduced to about one-third, but even three hours after the injection the rabbit's blood serum has a very definitely increased antibacterial power.

No ill-effects followed the injection into the rabbit of sufficient egg-white (suitably diluted) to make in the blood a concentration of almost 1 per cent., and it is possible that in cases of a generalised infection with a microbe susceptible to the bacteriolytic action of egg-white—e.g., *Streptococcus fæcalis*—the intravenous injection of a solution of egg-white might be beneficial.

Summary.

Egg-white contains a bacteriolytic, bactericidal, and bacterio-inhibitory substance. On a susceptible bacterium the lytic power is still manifest when the egg-white is diluted 50,000,000 times. The bacteriolytic power of egg-white from different species of birds varies considerably when tested to the same microbe. The egg-yolk has a very slight antibacterial action on a susceptible organism, but when tested to a less suceptible microbe it has apparently no antibacterial power, and to some extent inhibits the bactericidal action of the egg-white. Egg-white inhibits the growth of most of the pathogenic bacteria tested, and has a definite lethal or lytic effect on many of these bacteria—e.g., staphylococcus, streptococcus, meningococcus, *B. typhosus*, *B. anthracis*, &c. The lysozyme of egg-white resists peptic and tryptic digestion, and following the ingestion of raw egg-white by the mouth the number of streptococci in the fæces was temporarily much reduced. Egg-white added to blood in vitro maintains its antibacterial action, and when injected intravenously into an animal it confers on the blood serum of the animal marked antibacterial powers which are still evident after several hours.

(*Continued at foot of next page.*)

THE FACIAL PHENOMENON IN OLDER CHILDREN.

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IN 1860 Trousseau first called attention to the fact that laryngismus, carpo-pedal spasm, and convulsions were all manifestations of one condition—namely, tetany. It was not until 1879, however, that Chvostek described the sign which bears his name. Chvostek's sign, or the facial phenomenon, is a contraction of the facial muscles elicited by tapping the branches of the facial nerve, and has generally been accepted as an indication of the presence of tetany in infants. It has, however, been observed to occur in older children in many other diseases, such as spastic diplegia, epilepsy, tuberculosis, and gastro-enteritis. Most observers have merely commented on the fact that the sign is present in these conditions and have offered no explanation as to its possible significance.

While making a study of tetany during the past year, we have been struck with the frequency with which this phenomenon occurred in older children who showed no other sign of tetany and from whom no history of previous tetany could be elicited. The question as to whether increased mechanical excitability, manifesting itself in the form of a Chvostek's sign, is to be regarded as a phenomenon of clinical significance has therefore arisen. In an attempt to throw some light on this problem we have examined healthy children under different conditions as well as those in hospital wards or attending dispensary for ailments other than tetany.

Since we wished in the first instance to come to a decision as to the possibility of a connexion between the facial phenomenon and tetany in the older child, we have selected the material for investigation from three different sources. The first group consists of children attending a school in one of the poorest districts where rickets and tetany are common. The second group was from a school in a better working-class district, where one would expect tetany to occur more rarely. Children of the third group were attending a private school in one of the best residential districts of the city in which tetany is almost unknown. In addition we have recorded the occurrence of the facial phenomenon (F.P.) in children attending the out-patient department of the hospital. Chvostek's sign was considered positive when on tapping the cheek a contraction of the muscles was observed at the forehead, at the angle of the nose, or at the mouth. A contraction at all three places we recorded as + + +, and at one place only as +.

It should be noted here that a marked mouth twitch was frequently obtained in the absence of any contraction at the brow or nose. Further, although in many cases very marked contractions occurred at all three places the mouth twitch was usually the most notable. On the other hand, in infants and young children with other signs of manifest tetany, it has been our experience that the brow twitch is usually the most severe of the three, and that only when this contraction is marked does one get a mouth twitch as well. The sudden rapid twitch obtained at the lip in these cases is not to be confused with the slower and more sustained "sucking reflex" elicited in the normal sleeping infant by tapping or stroking the cheek.

Attention may also be called to the fact that in the older child the facial phenomenon may vary from day to day. This variation cannot be correlated with any obvious change in the general condition of the child, and has also been observed by Mosse[1] and Hölzel.[2] The Chvostek sign in children with undoubted tetany, on the contrary, remains singularly constant except after a convulsion, when it is frequently not elicited, or during treatment, when it disappears gradually, the brow twitch being usually last to go.

Table I. shows in detail the figures obtained from our investigation :—

TABLE I.

—	No. of cases examined.	Sex.	No. showing positive F.P.	Per cent. of positive F.P.
(*a*) Children from poor class school	266	Boys	65	24·4
	301	Girls	77	25·5
(*b*) Children from better working-class school	351	Boys	107	30·5
	508	Girls	158	31·1
(*c*) Children attending private school ..	144	Girls	55	48·2
(*d*) Children attending dispensary	72	Boys	13	18·0
	81	Girls	23	28·1
Total	1723		498	29·0

In all 1723 individuals between the ages of 3 and 18 years of age were examined, the majority of them being between 5 and 12 years. In 498, or 29·0 per cent. of these, we obtained a positive facial phenomenon. In each of the groups of healthy children the percentage occurrence of the sign in boys and girls is almost equal, though the very small differences which exist indicate a slightly greater frequency in the case of the girls. In the children seen at the out-patient department the sign was found much more frequently in the girls, though the smaller numbers included in this group render the figures less reliable.

The most striking fact elicited from the figures is that the Chvostek sign occurred most frequently amongst the healthy children of the best district, and least frequently amongst the children of the poorest class. This supports the view that the sign in older children is not an indication of latent tetany. Rickets is a disease which is almost entirely limited to the poorer classes in this city, and it is well known that the incidence of tetany bears a close relationship to that of rickets. Hence, if the facial phenomenon is to be taken as an indication of latent tetany, one would expect to find it more frequently in the poorer than in the better class districts. This, however, is far from being the case.

Amongst the dispensary cases the facial phenomenon not only occurred less frequently than amongst the healthy children, but appeared to bear no relationship to any of the pathological conditions for which the children were attending, since its frequency in any one disease was not sufficiently striking to call for attention.

We have further examined a certain number of the children showing a positive facial phenomenon for other signs of tetany but were unable to find them. In Table II. we have collected the results of a more detailed study of 12 of those who were in the hospital wards. The electrical reactions alone were determined in 20 others, but as the results were similar to those recorded in the table, they have been omitted for the sake of brevity.

From a study of Table II. it will be apparent that in no case did the electrical reactions afford conclusive evidence in favour of a diagnosis of tetany. A kathodal opening contraction was never obtained with a current less than 5 ma. The kathodal closing contraction varied between 0·3 ma. and 1·0 ma., and bore no relationship to the severity of the facial phenomenon. In six of the cases we found "anodal irritability"—that is, an anodal opening contraction was obtained

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(Continued from previous page.)

THE ANTIBACTERIAL POWER OF EGG-WHITE: REFERENCES.

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2. Wilm: Ibid., 1895, xxiii., 145.
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7. Fleming: Proc. Royal Soc., 1922, Series B, xciii., 315.
8. Fleming and Allison: Proc. Royal Soc., 1923, Series B, xciv., 145.
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with less current than an anodal closing contraction. This sign has been suggested by von Pirquet [3] and others as an indication of the existence of latent tetany. We ourselves have quite frequently obtained an anodal opening contraction with less current than the anodal closing contraction in normal children with no facial phenomenon and no history suggestive of tetany, while Findlay, Noel Paton, and Sharpe[10] have pointed out that this so-called "anodal irritability" may occur in normal animals. Indeed, we have seen it present on one occasion and not on another in the same apparently healthy child. We do not therefore attach any importance to its occurrence. It has, in fact, been our experience that in doubtful cases of latent tetany little help in substantiating the diagnosis is to be gained from a study of the electrical reactions.

TABLE II.—*Giving Electrical Reactions and Content of Serum in Calcium and Phosphorus.*

Sex.	Age in years.	F.P.	Disease.	KCC.	ACC.	AOC.	KOC.	KCT.	Ca.	P.
Girl	4	+ + +	Post-diphtheritic paralysis.	0·5	1·3	2·4	5 +	2·0	10·2	3·2
,,	8	+ + +	Cerebral tumour.	0·3	1·2	0·6	5 +	1·5	10·5	5·8
,,	8	+ + +	Rheumatism.	0·8	2·0	1·6	5 +	2·2	12·0	5·1
Boy	5	+ + +	Epilepsy.	0·4	1·6	1·4	5 +	2·0	10·5	5·2
Girl	6	+ + +	Cerebral tumour.	0·4	1·0	5 +	5 +	1·6	11·4	5·0
Boy	6	+ + +	Epilepsy.	1·0	1·8	3·2	5 +	4·0	10·4	5·7
Girl	13	+	Tuberculosis.	0·7	1·0	5 +	5 +	2·2	10·5	4·0
,,	12	+ +	Encephalitis lethargica.	0·3	1·1	1·1	5 +	2·5	10·5	6·4
Boy	11	+ + +	Epilepsy.	0·6	1·8	1·6	5 +	4·0	11·4	5·1
Girl	8	+ + +	,,	0·8	2·0	1·6	5 +	2·2	12·0	5·1

It is also of importance to note that the calcium and phosphorus content of the serum was essentially normal in all the cases examined, and we have found that the facial phenomenon does not completely disappear under treatment by calcium chloride in these cases as it invariably does in latent tetany.

We have also examined 320 infants under 3 years of age in the out-patient department of the hospital and found in this group 46, or 14·3 per cent., of positive Chvostek signs. The figures for this group in detail are as follows:—

Boys examined ..	161 ..	positive	22 (13·6 per cent.)
Girls ,, ..	159 ..	,,	24 (15·0 ,, ,,)

Practically all of the cases with a positive sign in this group were undoubtedly suffering from tetany in either a latent or an active form. The presence of other indisputable signs at the time of examination, or a history of convulsions, carpo-pedal spasm, or "crowing" could be readily elicited.

Discussion.

Thiemich [4] and Herbst [5] have both stated that a positive Chvostek's sign justifies a diagnosis of latent tetany. Schultze [6] examined 1648 school-children between the ages of 6 and 14 years, and found Chvostek's sign positive in 8·4 per cent. He also found increased electrical excitability in 58 per cent. of those showing a positive sign, and in the remaining 42 per cent. there was a history of convulsions in the child or convulsions in some other member of the family. We cannot determine on what grounds he diagnosed increased electrical excitability, but of course if he considers anodal irritability as evidence of this his figures are readily explainable. Veronese [7] tested 413 children for the presence of a facial phenomenon and found it in 21 per cent. The children examined were between the ages of 5 and 9 years. Pollitzer [8] found a positive sign in 78·2 per cent. of rachitic children, and 18·4 per cent. of other children. He comments on the surprising frequency with which the sign occurs in tuberculous cases free of rachitic complication, and suggests that the demineralisation which is common in tuberculosis may be responsible for the mechanical over-excitability. Hölzel,[2] in 2314 patients suffering from various types of insanity, found a positive Chvostek sign in 17·7 per cent. of males and 22·4 per cent. of females. It was not constant from day to day and was seldom seen in patients over 40 years of age. Römer [9] states that a positive facial phenomenon was obtained in 16 per cent. of epileptics. He also found increased electrical excitability in these cases, and advises that they be treated with calcium. We have examined 85 epileptics of all ages and found the incidence less than in any of the groups of healthy children. Our figures are as follows:—

Males examined ..	61 ..	positive	7 (11·5 per cent.)
Females ,, ..	24 ..	,,	6 (25·0 ,, ,,)
	85		13 (15·3 ,, ,,)

Mosse [1] frequently found the Chvostek sign in older children, but concluded that it has not the same significance in the older child that it has in infants and young children.

While it is evident from the figures of the above investigators that the facial phenomenon is frequently associated with diseases other than tetany, our results show that the incidence of the sign is just as great amongst apparently healthy individuals, and for this reason we would hesitate to attach any clinical significance to its occurrence in the older child. The fact that the phenomenon was found most frequently in children living under the best social conditions is, however, difficult to explain. The highly-strung, neurotic type of child is perhaps more commonly encountered in this class than in any other, and it seems probable that the exaggerated response to the sudden mechanical stimulus is merely an indication of this increased nervous tension.

Conclusions.

1. In 1723 children between the ages of 5 and 18 years, 29·0 per cent. showed a positive facial phenomenon.

2. A positive facial phenomenon in older children is not to be considered as evidence of latent tetany, because (*a*) there is no increased electrical excitability; (*b*) no other sign of tetany and no history of previous tetany could be obtained in any of the cases; (*c*) the sign varies from day to day; (*d*) the calcium and phosphorus content of the serum were found to be altered; (*e*) the sign was found most frequently amongst a class of children in whom tetany rarely occurs; (*f*) treatment with calcium chloride failed to produce a complete disappearance of the sign, as it does in cases of undoubted tetany.

3. The fact that the sign occurred as frequently amongst healthy as amongst ailing children, and its common occurrence in the children brought up under the best social conditions, have led us to attach little significance to its presence except as a possible indication of a neurotic disposition.

We desire to express our gratitude to Dr. Leonard Findlay for much help and interest in the investigation.

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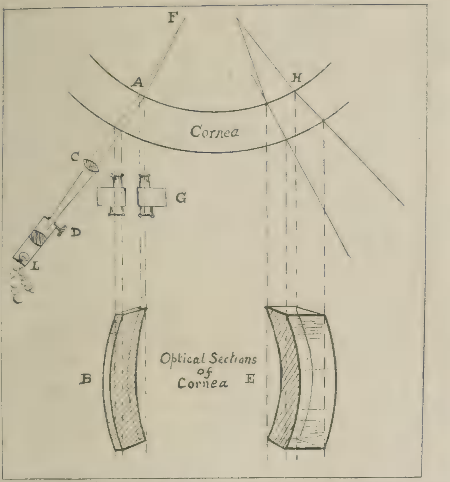
GULLSTRAND'S SLIT-LAMP IN THE OUT-PATIENT WORK OF AN EYE HOSPITAL.

BY LEWIS H. SAVIN, M.R.C.S. ENG.

THE principle of Gullstrand's slit-lamp is in its essence a very simple thing. A fine flat wedge-shaped beam of light is thrown obliquely across the cornea (Fig. 1, A). Looking from in front with a binocular microscope (G) one can see lit up an oblique section through the corneal substance as in (B). The tip of this light wedge is the image (F) cast from the lamp (L) by a lens (C) of an illuminated slit (D). Widen your slit and you produce a broader wedge (H), and instead of the fine optical section with its delicately illuminated corneal nerves, a good deal of the anterior epithelium and Descemet's membrane is also lit up in the form of a truncated pyramid (E). The rest of the slit-lamp is an ingenious mechanism for directing the beam of light so that, for instance, it may be made to pass across the anterior chamber and the lens.

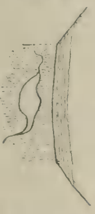
FIG. 1.



Diagrammatic schema of slit-lamp (not drawn to scale). For this the author is indebted to Dr. J. Keyms.

On the front of the cornea it is very striking to watch the continuous stream of tears passing across, resembling water across a West-End florist's windows. The iris is an exquisite living spongework continually dilating and contracting, a beautiful sight, especially in light-grey eyes. Darker irides have a coarser texture. Throwing the beam through the lens it is interesting to examine posterior polar opacities, if present, which they often are. Tiny egg-shaped patches in the posterior capsule (Fig. 2), they often have thread-like processes, remnants, one supposes, of the tunica vasculosa lentis.

FIG. 2.

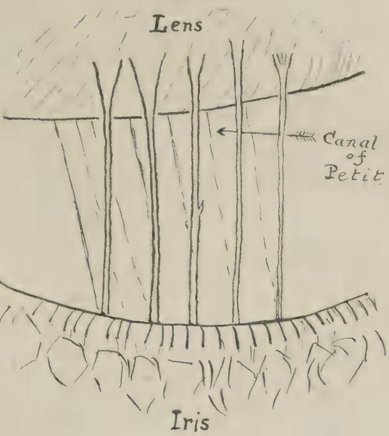


Posterior capsular lens opacity seen by diffuse light.

I have once seen the suspensory ligament of the lens in the living eye. A small boy had congenitally dislocated lenses, on one of which a discission had been performed before he was examined. In the other eye the suspensory ligament was plainly seen, rounded fibres passing in front and behind the lens, leaving the canal of Petit plainly visible (Fig. 3). Where the discission had been performed in the other eye it was interesting to see the swollen lens substance, cloud-like masses protruding through the incisions in the lens capsule.

In the ordinary Gullstrand model the light beam need not necessarily be white, but can be converted by a suitable adjustment to red-free light. Then the fine red blood-vessels stand out black, and it is possible with difficulty to watch the blood circulating through a vessel, the short black columns of the blood passing steadily along. In this way it is possible to determine the velocity of the blood, and pharmacologists may study directly the effect of drugs on the capillaries.

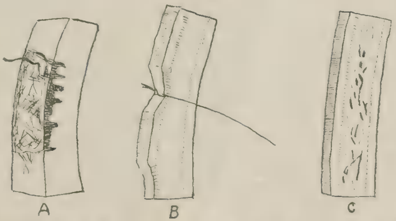
FIG. 3.



Showing suspensory ligament of lens.

Supposing a man comes up with a faint nebula of the cornea. Has it been formed by an ulcer, an interstitial keratitis, or what? The slit-lamp throws considerable light on the question. The ulcer leaves its scar on the surface, Fig. 4 (A) (B), the keratitis in the corneal substance (C), and with the slit-lamp it is possible to determine absolutely the level of any scar tissue.

FIG. 4.

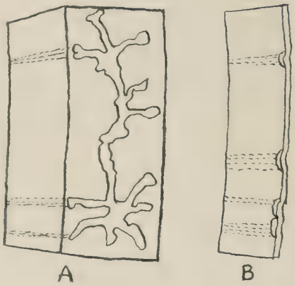


Corneal opacities. A. Nebula after ulcer. B. Healed ulcer. C. Nebula from tuberculous interstitial keratitis.

How is a corneal ulcer progressing? Besides allowing you to see the ulcer illuminated at many times its natural size, by viewing the ulcer in optical section you can easily see how far it has eaten its way into the corneal substance. For instance, the dendritic ulcer in Fig. 5 can be seen beautifully outlined in fluorescein (A), while the optical section (B) shows that the ulcer is entirely superficial. When an ulcer is stained with fluorescein the dye penetrates some little way into the substantia propria of the cornea. The lines passing across the optical section (B) are lines of shadow from the fluorescein-coloured areas.

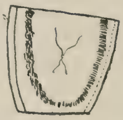
Every clinician knows the difficulty which sometimes attends the distinction between a primary and secondary glaucoma. In this the slit-lamp often shows itself of value, as it will often show the presence of very fine spots of keratitis punctata on the posterior surface of the cornea. In a primary glaucoma, when the anterior epithelium is focused up, cloudy patches can be seen studded with vesicles. In between the cloudy patches are often clear lanes of normal epithelium lit up by diffuse light. The posterior epithelium is clear. In secondary glaucoma, in addition to the cloudy anterior, epithelium K.P. can often be seen on the posterior surface. Anomalies of shape in the cornea, such as kerato-conus, are readily demonstrated. An important field for the lamp lies in the study of lental opacities. Their exact position can be found, and it can be easily seen in a cataract before operation just how much clear lens matter still remains, so that the operator can choose the best possible time for removal.

FIG. 5.



A. Dendritic ulcer stained with fluorescein.
B. Optical section of A.

FIG. 6.



Section of lamellar cataract.

Lamellar cataracts form an interesting study (Fig. 6). The relative position of the opaque layers of lens varies in different cataracts. As the lens grows in size by proliferation of the cells at the equator, one may suppose that the lamellars, with more superficial opaque layers, are of later formation than the deeper cataracts. With more material for judgment it may become possible to give an approximate date to the period of malnutrition which formed the cataract.

I have already mentioned the exquisite activity of the iris as seen under the slit-lamp—for instance, in a case of old iritis with a few posterior synechiæ. These tough, thin bands jerk taut as the iris tries to dilate, much like a rope on a flapping sail. Early blurring of the iris spongework and pigment patches on the lens are to be seen much better than with an ordinary binocular loupe. Sometimes a chronic uveitis can be detected long before ordinary methods would permit. A woman complained that one eye seemed slightly misty. Vision was 6/9, 6/5 in the other eye. The iris was a slightly paler blue than its companion, but dilated freely under a mydriatic. There was no appreciable refractive error. Why did the woman only see 6/9? Examination with a loupe showed a few fine specks on the back of the cornea. The slit-lamp showed these specks were definite patches of K.P. It was a chronic uveitis. When the anterior vitreous humour was lit up by the light wedge, myriads of minute opacities could be seen passing across the field of view on movement of the eye, just like snowflakes carried by the wind. In a case of sympathetic ophthalmia the slit-lamp showed opacities five days before any other signs were seen.

It is always possible to detect vitreous opacities by means of the slit-lamp long before they are visible on axial illumination with the ophthalmoscope, no matter whether a plane or a concave mirror is used. I have recently seen a case with massive choroiditis in one eye, but with the other eye normal as far as careful ophthalmoscopic examination could show. Examination with the slit lamp, however, showed delicate cobweb-like vitreous opacities in that eye too.

No doubt the slit-lamp will add enormously to what medical students of the future will have to learn about diseases of the eye.

DIAGNOSIS AND TREATMENT OF DIABETES MELLITUS IN HOSPITAL AND GENERAL PRACTICE.

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OUR knowledge of the diagnosis and treatment of diabetes mellitus has accumulated rapidly of late. Investigations have been reported in detail on practically every aspect of the subject; many schemes of diagnosis and treatment are well known and appreciated, and yet students and practitioners repeatedly confront one with the difficulty of applying the scientific principles to general practice. What is the minimum of investigation required for diagnosis? Can a patient be treated satisfactorily at home? What is the simplest and most practicable method of constructing or measuring diets? What are the indications for insulin? Can it be used at home to the same advantage and with the same safety as in hospital practice? How is its dose regulated? In fine, what are the essentials of procedure? These are the points on which the practitioner wants information, capable of ready application. The question of prognosis also arises: Is the patient likely to recover a measure of tolerance to carbohydrates as the result of treatment? Or, if insulin is employed, must it be continued indefinitely or may improvement eventually lead to its withdrawal?

My original intention was to publish in detail the results of my investigations on the effects of insulin in diabetes, but as these results are, in the main, confirmatory of work already published by others, it was thought better to treat the subject in a more general way by trying to answer such questions as the above. The experimental and clinical findings will be utilised to support the views put forward.

1. DIAGNOSIS.

In considering the points of value in diagnosis, it will simplify matters if, first of all, we contrast the carbohydrate metabolism of the normal individual with that of the diabetic.

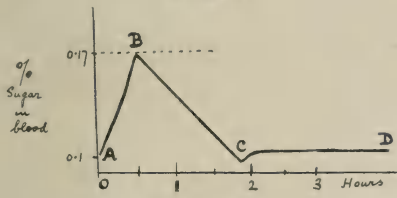
Investigation of Carbohydrate Metabolism.—Without entering into lengthy explanations of well-established facts, it may be stated at once that the nature of a person's carbohydrate metabolism can be determined sufficiently well by noting the variations that occur in the concentration of blood-sugar over a period of a couple of hours, following the ingestion, on a fasting stomach, of a moderate amount of carbohydrate. The latter is usually taken in the form of glucose (25–50 g.) and the blood-sugar estimated at half-hourly intervals for two hours; represented graphically this is known as a "blood-sugar curve." The term "fasting" is taken to mean before breakfast or four hours or more after a meal. It will be shown presently that more reliable results are obtained by carrying out such investigations before the patient has had breakfast. In a normal person from about two hours ($1\frac{1}{2}$–$2\frac{1}{2}$ hours) after a meal until food is taken again the percentage of sugar in the blood remains constant at approximately 0·1 (0·09–0·115); this concentration is known as the "fasting (or resting) level."

When carbohydrate is ingested, the blood-sugar rises in concentration as absorption proceeds, until the mechanism for its storage is so stimulated to action that the fasting level is regained within two hours. Below a certain maximum the amount of carbohydrate taken regulates the height to which the blood-sugar rises—e.g., 10 g. carbohydrate will cause a rise to about 0·13 per cent., 15 g. to, say, 0·14 or 0·15 per cent., whereas 30–50 g., or more, produce a concentration of approximately 0·17 per cent. (0·16–0·19)—a maximum or "threshold" which, in normal metabolism, cannot be forced; glycosuria does not occur.

There is still doubt as to the exact nature of the mechanism of storage, but for present purposes it may be regarded somewhat as follows. The store-houses of carbohydrate—the liver and muscles—are controlled, as far as glycogenesis and glycogenolysis are concerned, by the internal secretion of the pancreas, and the activity of the latter is, in turn, dependent on the concentration of sugar in the blood, a rise above the resting level acting as a stimulus. When only a small amount of carbohydrate is ingested, the blood-sugar has only risen a little when storage causes it to fall again. On the other hand, if larger amounts be taken, it would appear that the stimulus of a higher (or the "threshold") concentration is necessary before the mechanism is adequately set in action.

The apex of the blood-sugar curve generally occurs half to one hour after ingestion. (See Chart 1.) The glucose is given at A; at B storage comes into full play; at C the fasting level has been regained. The apex B is remarkably constant in height for the same individual, no matter how large the intake of carbohydrate (short of upsetting the stomach)—the threshold (at 0·17 per cent.) constituting an effective barrier to glycosuria.

CHART 1.

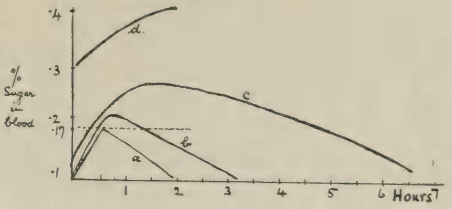


The outstanding characteristic, however, of normal sugar metabolism is the rapidity and the effectiveness of storage—the prompt return to fasting level within two hours. After the age of about 40 or 45 years two and a half hours may be required. From what has already been said, it will be understood that this phenomenon is dependent on: (1) the efficiency of the pancreatic hormone—insulin; (2) the efficiency of the liver and tissues to store carbohydrates. The endocrines generally and the related vegetative nervous system also play a part. In diabetes mellitus it is the pancreatic hormone that is at fault. Implication of the other factors is readily recognised by the associated signs and symptoms, and will not be considered here.

In Chart 1, then, the fall of the curve from B to C may be regarded as primarily due to a normal output of insulin by the β cells of the pancreas when stimulated by the rise in blood-sugar. The insulin may be said to throw open the carbohydrate depôts for purposes of storage. The fall of the curve to fasting-level indicates that storage is greater than assimilation, while the maintenance of this level—C to D—shows that the two processes are now running pari passu. I have found, in common with others, that as much as 20 per cent. of a large carbohydrate meal may be recovered from the stomach after the blood-sugar had fallen to normal; absorption was still proceeding, but at a gradually diminishing rate—the activity of the storage mechanism subsided in proportion. That the latter is true is demonstrated by giving a large meal of carbohydrates, and then noting the effect on the blood-sugar of a second meal given after a varying interval from the fall of the curve. As long as absorption and storage are still in progress, the shorter the interval the lower and more prolonged will be the second curve. On the other hand, if absorption be over and the storage mechanism rested a normal curve may be obtained. The force of this observation will be appreciated when we come to treatment.

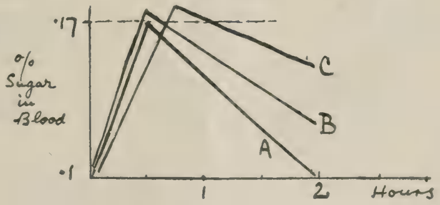
From the point of view of diagnosis, diabetes mellitus may be defined as a disease in which glycosuria occurs as a result of faulty storage of carbohydrates. In its incipient stages blood-sugar estimations show that the fall of the curve is slower than normal: at the two or two and a half hour period the fasting level has not been reached—e.g. the concentration may be 0·13 or 0·14 per cent. As the disease progresses this figure rises to 0·15, 0·16, or more, the blood-sugar requiring an increasing length of time to return to the normal. The longer the concentration remains above the resting level the greater will be the stimulation, and therefore fatiguing, of the islets of Langerhans and the less the time for their recuperation; a vicious circle has thus been set up. The curves are not only lengthened but gradually increased in height; the threshold is forced and glycosuria occurs. In such a case as this let us consider what happens in the course of a day. The hyperglycæmia resulting from breakfast may not have subsided when lunch time arrives; the exhausted islets are unfit to resume their work, storage becomes more and more ineffective, and it is easy to picture the advanced stage in which the blood-sugar is in excess next morning. In Chart 2 are shown blood-sugar curves after a dose of 30 g. glucose in (*a*) a normal person; (*b*) a patient with a slight defect of storage; (*c*) moderate diabetes; (*d*) marked diabetes.

CHART 2.



At this juncture it is opportune to raise the question of the best time to obtain blood-sugar curves. A short time ago Oliver and Haworth[1] pointed out the effect of fat on blood-sugar curves in the normal. They showed that excess of free fat in the blood interfered with absorption of glucose by the tissues. This is well illustrated by giving a fairly large amount of fat three to ten hours before the ingestion of the sugar. The following experiments by the writer will serve as examples:—

CHART 3.



A normal man, 30 years of age, given 50 g. glucose on a fasting stomach at 9 A.M. The blood-sugar curve is shown as A in Chart 3. On the following day the same amount of glucose was given mixed with 2 oz. of butter; the curve obtained is shown as B. A third experiment was performed next day: at 5.30 A.M., 2 oz. butter given, and a curve obtained for 50 g. glucose given at 9 A.M. (see curve C). The curve C in particular is suggestive of that of an incipient diabetes.

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[1] THE LANCET, 1923, ii., 114.

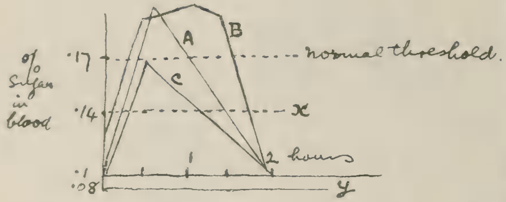
If the fat be taken 12 to 20 hours before the dose of sugar the curve is normal. Fat assimilated into the tissues promotes rather than inhibits storage. Accordingly it is better to obtain blood-sugar curves before breakfast, but when this is impossible, four hours or more should elapse after food before investigations are begun, and the patient should have been warned previously that fats in the meal are to be reduced to a minimum.

Types of Glycosuria.

Two other types of glycosuria must always be borne in mind: (*a*) renal glycosuria; (*b*) "lag" (or "delayed stimulus") glycosuria.

Renal Glycosuria.—In this somewhat rare condition the threshold for sugar is low, while the variations that occur in blood-sugar concentration are normal; there is no defect of storage. Instead of the threshold coinciding with the apex (0·17 per cent.) of the blood-sugar curve, it may, for example, be only at 0·14 per cent. (see *x*, Chart 4). Glycosuria is present while the blood-sugar is above the threshold and absent in the intervals. Sometimes the threshold is even lower than the normal fasting level (see *y*, Chart 4); in such cases the glycosuria is continuous, being, of course, increased when the blood-sugar is raised.

CHART 4.



"*Lag*" *Glycosuria.*—This anomaly is one in which the blood-sugar curve rises above the normal threshold, but, unlike the diabetic, returns to resting level within two hours. Glycosuria results while the threshold is exceeded and is necessarily intermittent. The condition still awaits adequate explanation. It would seem that a concentration of blood-sugar higher than usual is necessary to induce storage. It is worthy of note that out of the seven cases I have investigated during the past two years three were decidedly neurotic, two showed instability of the vegetative nervous system, and two appeared to be otherwise normal.

Two examples are given in Chart 4. A is from an otherwise normal patient; B from a highly neurotic man who had despaired of a cure after eight years of strict dieting. The health of the latter has improved greatly on a liberal diet, but the blood and urine findings remain unaltered. The condition is apparently not detrimental to carbohydrate metabolism, and no treatment is indicated beyond attention to the general health. Renal glycosuria is harmless and requires no treatment.

Essentials of Diagnosis.

In discussing the subject it is assumed that due attention has been paid to the history and to the general clinical condition of the patient, with a view to eliminating such causes of glucose in the urine as irritative lesions of the central nervous system, hyperactivity of the endocrines (thyroid, pituitary, or adrenals), sepsis, excitement, alcohol, and drugs. In pregnancy, if a reduction occur in the urine one must distinguish between glucose and lactose. Glucose, but not lactose, is fermented by yeast. Lactosuria is most often found in the last few weeks of pregnancy or after the child is born, but may be earlier. It is a harmless condition which disappears when lactation ceases. The fermentation test should always be applied if there be any doubt as to the nature of the reducing substance.

Glycosuria may be negligible or it may be of serious significance. It should, first of all, be ascertained whether sugar is constantly present in the urine or occurs only after meals. Sugar appears in the urine when the concentration in the blood rises above the threshold. This takes place: (*a*) In diabetes mellitus because of defective storage; (*b*) in renal glycosuria because of a low threshold, storage being normal; (*c*) in "lag" glycosuria apparently because a concentration of sugar higher than usual is necessary to set in action an otherwise normal storage mechanism.

Normal and Faulty Storage, as Indicated by Urine Examination.—Now let us consider whether it be possible to distinguish normal from faulty storage by urine examination alone. For reasons already given it is best to study the effects of the first meal of the day. Three specimens of urine are collected as follows:—

1. Bladder emptied, say, at 6 A.M., and urine discarded. Spec. A collected from 6–8 A.M.
2. A carbohydrate breakfast is then taken at 8 o'clock—either 3–4 oz. white bread (a cup of tea is allowed), or 1½–2 oz. cane sugar, or 30–50 g. glucose. Spec. B is collected by *thoroughly* emptying the bladder three hours later—i.e., at 11 A.M.
3. Spec. C is obtained an hour or so afterwards and before the next meal.

The three hours allowed for spec. B ensure that any sugar escaping through the kidney, during the two hours required for a blood-sugar curve, reaches the bladder. The results obtained in the three types of glycosuria mentioned are as follows:—

1. *Renal Glycosuria.*—(*a*) When the threshold is lower than the fasting level, say at 0·07–0·08 per cent., sugar is excreted continuously, but is considerably increased in amount when the blood-sugar is raised by taking carbohydrate. Since storage is normal, the fasting level is restored within two hours, and sugar excretion subsequent to this is the same as before the meal. Specimens A and C thus contain only very small, and approximately equal, amounts of sugar (0·5 per cent. and under), while that in spec. B is relatively large (see *y*, Chart 4). If the amount of carbohydrate ingested be increased—e.g., doubled—the results are similar.

(*b*) When the threshold is lower than normal, but not so low as the fasting level. Here sugar is absent from specimens A and C, but present in B (see *x*, Chart 4). Increase of the carbohydrate meal does not appreciably increase the sugar in spec. B.

2. "*Lag*" *Glycosuria.*—The same remarks as in para. (*b*) again apply.

3. *Diabetes Mellitus.*—In attempting to diagnose the glycosuria of diabetes mellitus from the above, it must be remembered (1) that storage is defective, (2) that sometimes, especially in cases of long standing, the renal threshold is so raised as to permit of a marked "diabetic curve" being obtained, and yet little or no sugar is found in the urine. Sugar may or may not be found in spec. A; if present, the percentage may be high or low, depending on the above factors. The foregoing remarks on renal glycosuria will make it clear that a high concentration is almost certainly due to diabetes; a medium concentration, say, 1–2 per cent., is at least very suggestive. As regards specimens B and C: It is only reasonable to expect that defective storage will reveal itself by the findings in one or other, or both, of these specimens, especially if a second set of observations be made, after double or treble the amount of carbohydrate has been given. For example, if appreciably more sugar be found in spec. C than in spec. A (which may contain none) the conclusion is that the normal fall of blood-sugar did not take place—the sugar concentration remaining sufficiently long above the threshold to cause an outpouring of sugar into spec. C. Increase of the dose of carbohydrate accentuates the difference between specimens C and A; it will also cause an increase in spec. B. These results indicate faulty storage. In the case where spec. A contains no sugar, and, after giving, say, 3–4 oz. bread, or 30–50 g. glucose, spec. C also contains none, either because the disease is slight or the threshold is raised, the distinction from a renal glycosuria, which gives similar results, is made by repeating the investigation on the following morning, using about twice as much carbohydrate. In renal glycosuria, all three specimens remain unaltered, while in diabetes the sugar content of spec. B is increased, and it is almost certain that sugar will now be found in C.

The tests may be briefly summarised as follows:—

Normal Storage (*Renal Glycosuria or Lag Glycosuria*) *is present* (*a*) if no sugar in both A and C with either the small or large amount of carbohydrate, especially if the larger dose cause no increase of the sugar in B; (*b*) if only small and practically equal amounts of sugar in A and C which are uninfluenced by increasing the carbohydrate taken. Spec. B also remains unchanged.

Deficient Storage.—(*a*) The more the concentration of sugar in spec. A exceeds 1 per cent. the more certain the diagnosis of diabetes mellitus; 1 per cent. itself is very suspicious. If the case be one of diabetes, fasting will lower the amount of sugar in A, whereas if renal glycosuria the condition remains much the same. In diabetes the amount of sugar in C is greater than in A, and varies directly with the quantity of carbohydrate ingested. (*b*) If no sugar in A but sugar in C, especially if increased with the large dose of carbohydrate. (*c*) If no sugar in A and none in C, even when the large dose of carbohydrate has been taken, but the amount in B has been appreciably increased. The absence of sugar in C in such cases is rare; the condition is generally one of mild chronic diabetes in which the renal threshold is high. If possible, the diagnosis should be confirmed by investigation of the blood-sugar. Provided care is taken that the bladder is thoroughly emptied when collecting spec. B, such tests, used in conjunction with the clinical evidence, are of great value in diagnosis. The presence of diacetic acid in the urine is most important: it goes far to confirm a diagnosis of diabetes mellitus.

I have checked these urine tests by simultaneous blood-sugar estimations, and find that, although they do not afford the same degree of information and are not as accurate as blood examinations, they are of real service to the practitioner who is unable to carry out the latter. Blood-sugar estimations, where at all feasible, are always to be recommended.

Blood Examination Required for Diagnosis.—The question now arises: What is the minimum of blood examination required for diagnosis? This is readily answered by reference to the remarks on normal and diabetic blood-sugar curves. The outstanding point of distinction between the two types is the failure of the diabetic curve to regain the normal fasting level within two hours (two and a half hours in elderly patients) after carbohydrate intake. Therefore, if a single blood-sugar estimation is made at the expiration of this period, one is able to judge how far the storage mechanism falls short of the normal; a raised fasting-level is equally significant. Such evidence of defective storage, together with the clinical signs of the disease, particularly if an appreciable amount of diacetic acid be found in the urine, leaves no room for doubt as to the nature of the condition. Of course, a more comprehensive idea of the state of carbohydrate metabolism may be obtained by finding the concentration of the blood-sugar before anything has been taken, and at intervals of 30 to 40 minutes for two hours after the meal. An intermediate procedure would be to make only three estimations: (*a*) One before the meal, (*b*) one 40 minutes after the meal, and (*c*) one at the two-hour period.

2. TREATMENT.

The treatment of diabetes mellitus, if it is to be effective, must be based on a sound appreciation of the patient's condition—the severity of the disease and the nature of the determining or contributing factors. A thorough search should be made for infections, attention being particularly directed to the gums, tonsils, nose, ears, lungs, heart, pericardium, urinary tract, and skin. Infections greatly aggravate the disease and should be eradicated as soon as possible. In case of necessity, local and spinal anæsthesia are usually permissible, but general anæsthetics are dangerous, the already crippled pancreas being often seriously damaged thereby, while coma may supervene. Since the introduction of insulin it has been found, however, that when the patient is given a preliminary course of treatment with this remedy, a fair margin of safety is obtained. Again, diabetics should take every precaution to guard themselves against infectious diseases, such as influenza, bronchitis, pneumonia, &c.; even the common cold is capable of greatly accelerating the disease, or, in the arrested case, of inducing a relapse.

The underlying principle of treatment should be to aim at recovery of the overworked or diseased islets of Langerhans. Arrest of the disease or recovery is only to be secured by their physiological rest. At the same time, it must not be forgotten that adequate nourishment is necessary; the general well-being of the patient counts for much.

To attain these results two lines of treatment are at our disposal: (1) Dietetic measures alone; (2) dietetic measures plus insulin. The problem is how to apply them with the greatest advantage to the patient and in the most practical manner.

It is well to realise at the outset that no two cases of diabetes are alike—each is a law unto itself and must be treated accordingly. That this variation does occur is readily understood when the number of factors involved is taken into account—the metabolism of carbohydrate, protein, and fat, singly or collectively, is affected to different degrees, the response of the organism as a whole to the disease varies, heredity probably plays a part, &c.

The following particularly influence one's attitude to the case: (*a*) Age of the patient; (*b*) state of nutrition and general condition; (*c*) severity of the disease, and whether it is in an acute or chronic stage; (*d*) if there has been previous treatment, its nature, duration, and results.

The advent of insulin has necessitated a revision of our methods of treatment and views on prognosis. The dietetic measures instituted by Allen, Graham, and others, however, still hold good and suffice in many instances. Other cases are almost unaffected by dieting and go steadily, often rapidly, downhill. It is in these that insulin displays most strikingly its beneficial effects. By careful correlation of the dose, and the amounts of carbohydrate, protein, and fat in the dietary, one is enabled not only to supply sufficient nourishment, but to rest the islet cells by maintaining a normal blood-sugar.

The question of treatment, then, largely resolves itself into whether insulin should be given or not. The circumstances of the patient will modify this to some extent—e.g., whether the patient is in hospital or at home; if the latter, the cost of insulin, and the possibility of attending to all the details that make for ideal therapy in hospital, are points of importance.

The treatment of diabetes should be viewed as treatment and investigation combined. The response to measures adopted affects our judgment of the severity of the disease, suggests the prognosis, and regulates further action.

I have found it convenient for purposes of, at least, initial treatment to classify diabetes as follows:—

Class A: (1) Acute, or rapidly advancing disease; (2) chronic disease which has seriously affected the patient's health; (3) diabetes of any degree in a young person; (4) threatening or actual diabetic coma.

Class B: (1) Mild chronic, or very slowly progressive disease in a patient of good nutrition, especially if the patient is elderly and obese, and has not had thorough dietetic treatment. Signs of arteriosclerosis are often present.

Class C: The intermediate type of case.

Class A is treated with insulin. Dietetic measures alone generally suffice for Class B; at least, there is no urgency for insulin. As regards Class C: If there be any doubt as to the state of the disease, or if it be of medium severity, it is wiser to employ insulin. It is even more important to control accurately the diet when insulin is being given than when it is not. Any difficulties that may exist in insulin treatment are associated more with the measurement and distribution of the diet than with the adjustment of the dose of insulin. The remedy cannot be used to the best advantage unless the patient be dieted scientifically.

Dietetic Treatment.

The Class B patient generally does quite well on dietetic measures alone. Suitable dieting will render the urine sugar-free and reduce the ketones, if present, to a negligible quantity, or abolish them entirely. The blood-sugar falls simultaneously and the morning fasting level may become normal, but it is doubtful if ever the normal blood-sugar curve is restored. In the majority the symptoms clear up rapidly if the diet furnish the minimum requirements for health without the reappearance of glycosuria or ketonuria. In these chronic cases the threshold is sometimes raised, and consequently, quite a marked "diabetic curve" may be obtained without the occurrence of glycosuria. Recently I encountered an interesting case of this sort:—

A chronic diabetic, aged 50, who had been kept free from glycosuria and ketonuria for years by dietetic measures, developed diabetic peripheral neuritis; there were absence of deep reflexes, hyperalgesia of the muscles, and considerable weakness of the legs—a partial foot-drop was present. A blood-sugar curve to 25 g. glucose showed a fasting level of 0·128 per cent., 0·250 per cent. at one hour, and 0·161 per cent. at two and a quarter hours, and yet no sugar was found in the urine over the period of the test. Rearrangement of the diet and a few doses of insulin so reduced the hyperglycæmia and improved the patient's condition that within a couple of weeks the hyperalgesia and weakness of the legs had practically gone and the reflexes were just making a reappearance.

Calorie Requirements for Health.

Calories required in 24 hours by adults: At rest, 11 calories per lb. body-weight; at light or moderate work, 14 calories.

Thirteen (or 12) calories per lb. is a convenient initial value for all adult cases; a patient weighing 140 lb. would thus require about 1820 calories. If the weight for height and age be abnormally high or low, then a correction should be made in order to approximate to the normal, by decreasing or increasing, respectively, the number of pounds before multiplying by 13.

In children metabolism is more active and consequently a greater number of calories must be given: At 2 years, 30 calories per lb. body-weight; at 5 years, 25 calories; at 10 years, 20 calories; at 15 years, 15 calories.

Calorie value of foodstuffs: 1 g. carbohydrate (C.) = 4 calories (approximately); 1 g. protein (P.) = 4 calories; 1 g. fat (F.) = 9 calories.

In health the diet is on an average composed of: C., 4/7; P., 1/7; F., 2/7; but in diabetes the diet is almost entirely made up of the latter two.

A certain minimum of protein must be given: About ½–¾ g. protein per lb. body-weight. In young people where growth is active this may be increased, with benefit, to 1 g. The requirements of carbohydrate and fat vary in every case and can only be ascertained by trial. In my experience, however, the majority of patients of this class eventually do best on a dietary containing about (an average): 0·3 (0·2–0·4) g. carbohydrate, 0·7 g. protein, 1·0 g. fat per lb. body-weight (= 13 calories per lb.) (due allowance being made for overweight or underweight). Thus a patient weighing 140 lb. would receive 42 (28–56) g. C., 98 g. P., 140 g. F. Cases with ketonuria, however, generally require less fat. In others, especially if the patient is obese, a reduction of the fat content of the diet often leads to more rapid progress. The various steps in treatment will be described presently.

The experiences with insulin and the details of dietetic treatment follow.

(To be continued.)

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A meeting of this section was held on June 13th, Mr. A. L. Whitehead, President of the section, being in the chair.

Dr. George Riddoch and Mr. Charles Goulden collaborated in a paper on the

Relationship between Sub-arachnoid and Intra-ocular Hæmorrhage.

Dr. Riddoch said the not infrequent occurrence of hæmorrhage into the sub-arachnoid space within the skull had long been known, but mainly as a cause of death in cases in which an incorrect diagnosis had been made during life. No distinctive symptomatology had been associated with it, hence it was regarded as unrecognisable at the bedside, and its outcome was regarded as fatal. But it had been found that the presence of blood on lumbar puncture indicated bleeding into the sub-arachnoid space. Ætiologically, there were three main groups of cases: (1) Those with traumatic rupture of meningeal vessels; (2) cases of bleeding into the sub-arachnoid space secondary to intracranial hæmorrhage; (3) cases of primary non-traumatic rupture of a meningeal vessel or aneurysm. The third group was the most interesting, and knowledge on this had been much added to by C. P. Symonds, so that it could now be diagnosed with reasonable certainty without the aid of lumbar puncture. Cases often occurred at an age when intra-cerebral hæmorrhage was not very common. In the present authors' series the ages were 43, 44, 46, and 53. Several authorities attributed the lesion to rupture of a congenital aneurysm of one of the basal arteries. Arterial hypertension was often absent from these cases. A frequent feature of such hæmorrhage was bleeding into one or both eyes. One of the four patients here reported died, and an eye was removed and examined histologically with the object of ascertaining by what means the intra-ocular hæmorrhage occurred. The contribution dealt with this case specially. The man was aged 44, and he was admitted to the London Hospital last February, under Mr. Russell Howard. His previous health had been good, except that he probably had sunstroke while in Palestine. While going upstairs he suddenly fell down, but did not lose consciousness and walked up to his room. A little later he was heard to fall and was found unconscious. He had three successive fits at short intervals, foaming at the mouth; he was convulsed and cyanosed. In the second fit, opisthotonos occurred. He was admitted to the London Hospital in a state of "cerebral irritation"; he resented examination or questioning. His pupils were of medium size, equal, and reacted to light and to accommodation; he had full ocular movements. All tendon-jerks were exaggerated, and the plantar response was extensor on both sides. Sensation seemed good. Blood-pressure readings were 140–180; temperature 97° F.; pulse 100, full and strong; respirations 24. Three days later his muscles were flaccid, his tendon-jerks were difficult to evoke, but the plantar reflexes were normal. Three days later still he had diplopia on looking to the right, and his tendon reflexes were absent. In a day or two the diplopia disappeared, but otherwise there was no change. A few days later he had difficulty in swallowing, and was very drowsy, the left side of his face was weak, and his tongue was protruded to the left. No tendon-jerks could be obtained, and, for the first time, there was incontinence of urine. The blood pressure was 140-190. Twelve days after admission he was stuporose and cyanosed, the breathing stertorous, at 34 per minute, pulse 114, temperature 102° F. Both fundi showed hæmorrhages in the neighbourhood of the discs, and the latter were swollen. The left fundus showed two large crescentic hæmorrhages along the inferior veins near the disc margin. The pupils were equal, and reacted well to light; there was a flaccid left hemiplegia. The heart's apex beat could not be felt, and his noisy breathing prevented the heart sounds being heard. The base of each lung was congested. The lumbar fluid was pink, and contained blood and a slight excess of lymphocytes. Wassermann was negative. He died on the thirteenth day of his illness, with a temperature of 104·2°, pulse 132, and respirations 62. Red-brown blood and a small blood-clot, together a few drachms, were found in the subdural space, and in the posterior part of the longitudinal fissure were two symmetrical areas of sub-arachnoid hæmorrhage; other collections of blood were scattered over the cerebral convexities, and much red and brown blood-clot lay under the arachnoid in the right Sylvian fissure, and a smaller amount in the left Sylvian fissure, anterior part of the median fissure, and cisterna basalis. A saccular aneurysm, a centimetre in diameter, projected backwards from the right intracranial carotid at the origin of the right middle cerebral, and it had been ruptured at its inner pole. Within the orbits the sheaths of the optic nerves were distended with blood. When the right eyeball was opened, multiple hæmorrhages were seen round the margin of the optic discs, the two largest lying on vessels. Purulent bronchitis and broncho-pneumonia were in the lungs. There was only moderate atheroma, but the left kidney was grossly atrophied and fibrotic, and its pelvis was cystic and projected inwards. There was no abnormality of renal vessels.

Discussing the clinical picture of rupture of a basal aneurysm, Dr. Riddoch said the patient in many cases had been said to have good health until the attack, but careful inquiry showed there had been headache, giddiness, defective memory for recent events, &c.; also there was usually tinnitus with periodic exacerbations. One of the four patients now dealt with had had periodic attacks of epistaxis, the bleeding having been preceded by lethargy and yawning with a sensation of heat on the vertex. On the epistaxis commencing he felt very much better and the symptoms disappeared. The onset of the seizure was always sudden. Usually the bursting of the aneurysm synchronised with some form of activity, which for the time raised the blood pressure. The coma into which the patient passed might rapidly become profound, all the signs of cerebral and medullary compression appeared, and he might die within a short time. More characteristic, however, was the clinical picture which, apart from the onset, resembled that of meningitis. Signs of local disturbance of neural function were always present, but usually slight. Frequently there were bilateral signs of pyramidal disturbance, such as diminished abdominal reflexes, increased tendon-jerks, and an extensor plantar response. An almost constant sign was rigidity of the neck, and Kernig's sign was often positive on both sides. An invariable sign of great importance was the presence of blood in the spinal fluid. With regard to the course of the complaint, recovery from at least the first seizure was common; after two or three weeks there was a return of consciousness, any palsies disappeared, and the reflexes became normal. Sometimes, however, the slight mental defects, such as unreliable memory, remained. But when vitreous or sub-hyaloid hæmorrhage had occurred, vision seemed to be more or less permanently impaired. One of the cases now narrated had had at least four seizures in 3½ years, and was still alive.

Mr. Goulden dealt with the ophthalmological aspect of the question in great detail, pointing out, first, the intimate anatomy of the parts concerned. With regard to the ophthalmoscopic signs, care must be taken not to confound these with those due to injury of the optic nerve following fracture of the base of the skull in the neighbourhood of the optic foramen and effusion of blood into the nerve sheath. The cases now being discussed were those in which there was no direct injury to the optic nerve by any such object as a spicule of broken bone, or any damage to the nerve by a sudden strain or crush such as occurred when there was a fracture in the orbit or optic foramen. The most common abnormality in the case was papillœdema, and it was usually bilateral and of remarkably rapid onset. The veins were always engorged and tortuous. Ophthalmic symptoms were not mentioned in any of these four cases, and as the patient was overcome by unconsciousness, that was not remarkable. The sheath of the nerve was tensely filled with blood-clot, which gave to the sheath the appearance of a distended vein. There was no infiltration of the nerve itself with blood; the blood-clot was delimited by the pial sheath. The sub-arachnoid space was full of blood. His conclusion was that the trouble consisted in interference with the venous return from the retina and optic nerve.

Mr. Leslie Paton pointed out that papillœdema did not quickly appear in all the reported cases of the condition. There was a type of papillœdema not necessarily associated with direct pressure from hæmorrhage in the nerve sheath, and in some cases in which the hæmorrhage was insufficiently severe to cause a rise in intracranial pressure the patient was dead before papillœdema could occur. In some cases there was a huge subhyaloid hæmorrhage without any distension of veins at all, and when, later, the disc could be examined, there was no sign of papillœdema, yet there were signs of hæmorrhage round the edge of the disc and of the physiological pit.

A Case for Diagnosis.

Mr. F. A. Williamson-Noble showed a case for diagnosis. When he first saw the patient the fundus appearances suggested retinitis punctata albescens; the appearances in the two eyes were similar. There was a bright spot at the macula. The peripheral part of the fundus in both eyes was slightly albinotic, and some of the retinal pigment could be made out here. The colour of the spots was about the same as that of the peripheral fundus; there were no such spots in the periphery. The fields were full, there was no night blindness, and the vision of each eye, with correction and a dilated pupil, was 6/9 full. It seemed unlikely, therefore, that the condition could be retinitis punctata albescens. Another possibility was that the condition might be due to multiple colloid excrescences of the membrane of Bruch. In a case of that kind, which the late George Coats published, the affected areas had a flat, scaly appearance, which showed a distinct glitter on movement of the light, and seemed to be a little raised above the level of the fundus. That patient, when seen, had been suffering from bilateral glaucoma for nine months, and the vision in the right eye was reduced to fingers at three feet, and in the left to mere perception of light. In the present case the dots did not glitter and did not appear to be raised above the general level of the fundus. This patient had no symptoms; the Wassermann test was negative and urine normal. He did not think such an extensive change could be inflammatory or there would be loss of vision. His suggestion was that the yellowish-white dots represented small localised bosses of the retinal pigment epithelium.

Dr. Rayner Batten projected on to the screen illustrations of two cases having a somewhat similar appearance. Here, again, there was no defect of vision, and there had been no material change during a long period of observation—in one case over 20 years. There was no evidence of disease in either patient.

Mr. Malcolm Hepburn said he considered these were usually cases of hyaline degeneration of the membrane of Bruch. Generally the areas of degeneration were surrounded by small areas of pigment. In the case now shown there was little pigment, but that did not necessarily militate against the view he had expressed, and it was supported by the fact that there was no interference with vision.

The President commented on the fact that in one of Dr. Rayner Batten's cases the dots were associated with opaque nerve-fibres; he thought that this was in favour of their being a congenital condition.

A Modification of Elliot's Scotometer.

Mr. Frank Juler showed a modification of the ordinary Elliot scotometer, for which instrument he expressed much admiration. Its fault was that it needed a second person to help in recording the readings taken. He got the instrument-maker to fix a rim round the edge of the rotary screen, so fixed and marked by angular degrees that it was visible from the front. This rendered it a one-man instrument.—Mr. R. Pickard described a method by which he had achieved the same object. He used a canvas screen, painted in dead black, and tangent circles also painted in black, but raised slightly above the surface so that they could be seen. He could use the instrument without assistance, and take fields quickly.

MEDICO-LEGAL SOCIETY.

OSTEOPATHY IN ITS MEDICO-LEGAL ASPECTS.

A MEETING of this Society was held at 11, Chandos-street, London, W., on June 17th, Sir **WILLIAM COLLINS**, in the absence of the President, being in the chair. After the business of the annual general meeting had been completed, Dr. **NORMAN J. MACDONALD** read a paper on Osteopathy in its Medico-legal Aspects. He said that in the United States of America there were two types of doctors—those holding degrees of M.D., who practised medicine on the lines recognised in this country, and those holding the degree of D.O. (doctor of osteopathy), who were legally entitled to practise with no other limitation than that they should not prescribe drugs. Even this limitation upon osteopathic practice had been removed in at least one State by a recent decision in the courts. The object of his paper was to demonstrate the value of osteopathy and to point out some of the legal aspects of osteopathic practice which might arise in this country. Osteopathy could be defined as a method of dealing with disease by spinal manipulation, and was founded on the belief that many diseases were the result of minor displacements of the vertebræ. The causes of these displacements (or lesions) were either violence or failure on the part of the body to react to environment. As an example of the first type he instanced the pain in the right shoulder and arm produced by over-reaching while playing tennis. The osteopath, in such cases, generally found abnormal fixation of the first rib at the costo-vertebral articulation, and the condition was easily cured by suitable manipulation or massage. As an example of the second type, he took the attacks of "gastric inefficiency" which followed dining "not wisely but too well." A medical student who had consulted him for this condition exhibited rigidity of the upper dorsal spinal muscles, which could have been easily felt by any person; no special tactile sense was required to perceive the difference in tone between the muscles of the two sides. Here, again, suitable manipulations to free the vertebræ resulted in breaking a vicious circle and curing the condition. As a testimony to the success of the treatment the medical student stated that he was able subsequently to consume double the number of whiskies and sodas without ill-effects. The condition commonly found was one of semi-subluxation of the vertebræ; the vertebræ became fixed in some axis of movement, perhaps one not commonly used, and the fixation was sustained by rigidity of the muscles and thickening of the ligaments. The resulting train of symptoms was reflexly produced and tended to keep up the rigidity, thus producing a vicious circle. He believed that the sympathetic nervous system played a large part in the production of symptoms. From the point of view of scientific accuracy it was unfortunate that post-mortem demonstration of the lesions was generally impossible, as the muscles which played so large a part in the mechanism of the "lesions" were either relaxed or in a state of rigor mortis. Moreover, post-mortem examinations were only very rarely obtained at the osteopathic hospital at which the speaker had studied in America, since the patients were all private ones and the death-rate was in any case very strikingly low. Clinically, certain definite relationships between the site of the lesion and the symptoms were seen. Thus a cervical lesion was associated with cranial symptoms, and a lumbar lesion with lumbago or pain in the lower limbs. The manipulations practised by osteopaths were of the type employed by bone-setters and were painless, unless a joint affected by rheumatoid arthritis were involved. The speaker was gaining faith that the manipulations had a beneficial effect upon the blood circulation quite apart from any local effect that was aimed at.

Possible Legal Aspects of Osteopathy.

Accidents to workmen were commonly followed by shock and pains of an indefinite character. Cross-examined by counsel during the lawsuit that ensued, the doctor in the case would admit that there was no organic lesion resulting from the accident and would perhaps characterise the case as one of "traumatic neurasthenia." The osteopath believes that such cases are associated with a definite spinal lesion and that they are capable, if not always of cure, at least of very considerable amelioration by osteopathic treatment. The result of such cure or amelioration would be of enormous financial importance to insurance companies, which now have to pay large sums as compensation for incapacity following minor accidents. As examples of the type of case to which he referred, Dr. Macdonald quoted several cases. The first was that of a girl, aged 20, suffering from concussion following a blow on the head, who was admitted to the wards of St. Bartholomew's Hospital, of which he was at that time house surgeon. She made a partial recovery at the time but continued to attend the hospital under various physicians and surgeons complaining of headaches, from which no treatment appeared to give any relief. After an interval of two years, during which he had been studying osteopathy in America, she again consulted the speaker. He found the muscles of the neck tense and a definite lesion between the first and second dorsal vertebræ, for which he gave osteopathic treatment approximately three times a week for six or seven weeks. As a result she became quite free from headaches. After three months a return of the headache necessitated one further treatment which had apparently completed the cure. Another case quoted was that of a young man, the son of a provincial surgeon, who had a heavy fall and hurt his left leg. For three years afterwards he suffered from sciatic pain. An X ray showed only a chip off the great trochanter. Treatment of all kinds, including massage and stretching the sciatic nerve, had failed to give any relief. Finally, he was sent to the speaker, who found much rigidity of both sacro-iliac joints and a slight rotation of the spines of the lower dorsal vertebræ. Twenty sittings of osteopathic treatment had so relieved the patient that he was able to play games, and he had since only required three isolated treatments. Had this been a legal case it might have produced much trouble. After describing two or three more cases Dr. Macdonald proceeded to discuss the regulation of the practice of osteopathy. He pointed out that osteopathy had been established in the United States of America for over 50 years, and that it was spreading over the whole world. There were no less than eight schools of osteopathy in America, some of which had as many as 500 students. All these students without exception qualified and practised with State licences. The Medical Act of 1886 in no way prohibited unqualified practice in this country, and he thought it probable that osteopathy would in time grow to be almost as important and well established as it now was in the United States. He therefore pleaded that it was time that the whole subject should be taken up and investigated by the medical profession. With this end in view he had intentionally read a paper which approached the subject from an unexpected angle, and he expected and would welcome criticism.

Discussion.

Dr. **W. ATKINSON** said that Dr. Macdonald's paper amounted to a eulogy of osteopathy rather than a discussion of its medico-legal aspects. Indeed, it was difficult to see how there could be any medico-legal aspects to osteopathy until such time as a school of osteopathy was established and recognised in this country. Dr. Macdonald had not described the form of the osteopathic manipulations from which so much success was claimed. As a medical referee sitting with a county court judge he had had considerable experience of compensation cases and of sifting medical evidence. If the case for osteopathy were on trial he would find it difficult to advise the judge favourably to the lecturer's case on the evidence he had put before them.

Dr. M. I. Finucane inquired whether osteopathy was founded upon the principles of anatomy and physiology as they had become known to medical men by the patient work of 100 years. The "treatment" of which the lecturer spoke appeared to be a form of massage which, as was well known, was beneficial to muscular rigidity. To the treatment of such cases as the lecturer had described by osteopathic measures there could be no objection, but grave errors sometimes arose in the practice of the "unqualified" osteopath. The speaker had recently rescued three cases of organic nervous disease, one of disseminated sclerosis, one of paralysis agitans, and one of locomotor ataxy, from treatment by osteopaths. He agreed that the whole subject of osteopathy required ventilating, and suggested that two or three osteopaths should meet in conference a similar number of medical men and lay out their case in full.

Dr. F. O'Kinealy said that the Society was indebted to the courage of the lecturer, who must have been aware that his paper would be bitterly criticised. At the same time, he maintained that the cases quoted could have been equally successfully treated by ordinary medical methods. Rigidity of muscles was a reaction to injury. By causing hyperæmia of the part the osteopath was in some cases assisting Nature in the cure, but there was nothing new or sensational in the means he employed.

Dr. S. H. Belfrage discussed the attitude that the medical attendant should adopt when it was proposed to call in an osteopath. Personally, when the case was an acute or serious one, he opposed the suggestion as strongly as he could, but in cases which were not likely to suffer any harm from manipulations he allowed the patients to please themselves. He recently had a case of a tumour of the thyroid which had been treated for six months by a doctor of osteopathy, whose fees had amounted to more than £150. The case had now been cured by a surgeon. The answer to the question, "What is osteopathy?" was, he thought, "osteopathy is a creed." Those who believed in it and practised it had things made easy for them; no work was required, no thought need be expended over individual cases. The fact that "cures" had resulted proved nothing. If the osteopath was a man of personality he could do some at least of his patients much good.

Dr. A. S. Morley referred to a type of case which Dr. Sicard, of the Hôpital St. Louis at Paris, had been working on for some time in which there was an inflammatory condition of the connective tissue within the spinal canal. A case of this type, whom he had seen in consultation with an eminent physician and who, he had to admit, had derived no benefit from ordinary medical treatment, had been subsequently cured by an osteopath. Cases of this type, he was therefore convinced, did well with osteopathy.

Mr. H. B. Wells, speaking as a member of the Bar, thought medical men were very biased in their treatment of the "unqualified practitioner." Surely the fact that the lecturer had taken up osteopathy after qualifying in the proper manner in this country was sufficient to prove that there was something in osteopathy. He had often heard doctors admit that they could do nothing with "traumatic neurasthenia," and that the best thing insurance companies could do was to "pay up." It appeared to him that it was time osteopaths had a fair and unhampered trial in such cases at least.

Mr. A. M. M. Forbes, also a member of the legal profession, admired the courage of the lecturer, who had to face the bigotry of the medical profession in their outlook upon all other forms of practice, as was exampled by their attitude towards Sir Herbert Barker. He hoped that if osteopathy was any good the country might have the benefit of it.

Sir William Collins, speaking from the chair, said that the discussion had at least proved the catholicity of the Society's platform. He referred to the fact that the lecturer had taken the degree of D.O. after obtaining the conjoint qualification in this country. New light on medical science had often come from non-medical sources. Neither Pasteur nor Chadwick, the father of sanitary science, had any medical qualification. Medicine was not bigoted, but would accept good work from any source provided only that it would bear the light of searching scrutiny. Having had some experience of teaching and examining medical students in the past (in anatomy), he could not feel reassured by the statement of Dr. Macdonald that all the students of osteopathy obtained the diploma. He gave an instance of the ignorance of anatomy of a lady osteopath who did not know how many cervical vertebræ there were. It was an error to suppose that the law in this country prohibited "unqualified practice," for there was no bar except that imposed by the Venereal Diseases Act of 1917, which rendered the treatment of V.D. by unqualified persons illegal. Even the Insurance Act had provision for those who desired to be attended by a herbalist. He would ask the lecturer whether the X rays in the case of the surgeon's son showed any displacement of vertebræ corresponding with that which he had detected in the course of his examination.

Reply.

Dr. Macdonald said that "treatment" meant moving the spine until free movement was obtained in the direction required. Operations of precisely similar kind were practised by orthopædic surgeons at the Royal National Orthopædic Hospital in Great Portland-street. Skill was required to obtain the right movement of the correct vertebræ, while keeping the remaining vertebræ at rest. He agreed that osteopathy was a "creed"; it was founded by a medical man, Dr. George Still, who was dissatisfied with the treatment of disease by drugs. Unfortunately the teaching of osteopathy had now become a business, and the colleges where it was taught depended for their funds on the number of degrees which they conferred, so that inevitably a number of unsuitable people obtained the diploma. As regards the suggestion that three osteopaths should confer with three medical men, it was a curious coincidence that there were just three osteopaths in this country who held medical qualifications, the other two being relatives of his own, he thought that all would be glad to meet the suggestion. The cases he had quoted had all failed to derive benefit from orthodox medical treatment. In reply to the question of the X rays, he said he thought he could detect minor displacements in the X ray plates. A recent article in the *Journal of Radiology* discussed just such minor displacements of vertebræ as osteopaths based their work upon.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A meeting of this Association was held at the Elizabeth Garrett Anderson Hospital on June 17th. In the absence of the President the chair was taken by Dr. Amy Sheppard.

Dr. Christine Murrell read a paper on

Emergencies in General Practice.

She said that in most cases the difficulties and embarrassments of emergencies in general practice were due to the fact that on these occasions the doctor is the central figure, that everyone is standing around waiting for the doctor to do something, and that the atmosphere is one of hurry and agitation. If one remembered that in practically only two conditions—namely, foreign bodies in the air-passages and hæmorrhage—was excessive haste the one essential of success in treatment, it became clear that the usual emergency was really a matter for calmness and deliberation. Most emergencies happened at night—no doubt the physiologists could offer an ingenious explanation—and one was usually summoned to them by a messenger. It must never be forgotten that the messenger might be able to furnish most valuable information—e.g., in cases of poisoning—and much time may be saved in the long run by questions at this stage. Dr. Murrell then dealt seriatim with various kinds of emergency, telling many anecdotes illustrative of the dangers which might beset the general practitioner. Hæmorrhage and foreign bodies in the air-passages were dealt with as the most urgent conditions. Œdema of the glottis was another almost as urgent. Fractures were considered to be emergencies, allowing of deliberation and indeed demanding it, the imperative need for care here, especially the taking of an X ray plate for the protection of the practitioner, being stressed. Infectious diseases might prove of considerable trouble, especially when the diagnosis was not quite certain, and the question of the advisability of waiting for the result of the examination of a throat swab before giving antitoxin was discussed. No discussion of emergencies would be complete without mention of insanity, and the need for care in dealing with the certification of lunatics was dwelt on.

A discussion followed upon the treatment of lunatics and the difficulty of dealing with suspected diphtheria during the delay often involved in getting a swab examined. The following members took part: Dr. SHEPPARD, Dr. E. ROBERTS, Dr. AGNES KEEN, Lady BARRETT, Dr. ETHEL BENTHAM, Dr. MINA DOBBIE, Dr. ELEANOR LOWRY, Dr. JOSEPHINE FAIRFIELD, Dr. ADELAIDE RENSHAW, and Dr. MARY A. BLAIR.

Reviews and Notices of Books.

DIABETES MELLITUS.

The Antidiabetic Functions of the Pancreas and the Successful Isolation of the Antidiabetic Hormone—Insulin. By J. J. R. MACLEOD, Professor of Physiology, University of Toronto; and F. G. BANTING, Research Professor, University of Toronto. The Beaumont Foundation Lectures. Published under the auspices of the Wayne County Medical Society, Detroit, Michigan. London: Henry Kimpton. 1923. Pp. 69. 7*s.* 6*d.*

Two of these lectures were given by Prof. Macleod and one by Prof. Banting in January, 1923, and no more recent work is included in the book. There is an account of the early work on the pancreas, and this is the best which has hitherto been published, but there are no references to the papers. There is a good account of the structure of the islands of Langerhans and of the staining reactions of the granules which has enabled the differentiation to be made between the cells of the acinous portion of the gland and also between the α and β cells. The arrangements of the islands with regard to the small ducts and their abundant blood-supply are fully detailed. An account of the comparative anatomy is given, and the arrangement in the teleostean fishes in which the island tissue is separated from the acinous portion of the gland is described. The structural changes which occur after the ligation of the pancreatic duct have been carefully studied and are very complicated. The acinous cells degenerate quickly as well as some of the islands, but this is followed by a regeneration of the acinous cells and some of the islands. But the regenerated acinous cells again degenerate and this process is repeated several times; after four and a half months the pancreas consists almost entirely of island cells which have been regenerated, but there are still a very few acinous cells existing. It is of great importance to have these observations stated so clearly in a compact form as the separate existence of the islands has recently been called in question by H. Oertel and Swale Vincent in our columns. A comparison of their papers with the description given by Macleod is most instructive. The early experiments by Dr. Banting with Dr. C. H. Best, which led to the discovery and isolation of insulin and the early attempts at its standardisation and assay, are set out. The book is well printed but has no index.

Food Tables Compiled Particularly for Use in Treatment of Diabetes Mellitus. Second edition. By G. A. HARRISON, M.B. Camb., Biochemist, Hospital for Sick Children, Great Ormond-street; and R. D. LAWRENCE, M.D. Aberd. London: H. B. Skinner and Co. 1924. Pp. 28. 2*s.*

THE knowledge of the sugar content of the foods which a diabetic may eat is of great assistance to the patient. The monotony of his diet is distressing, and any table which sets out the facts clearly is a boon both to him and to his doctor, who is often faced with unexpected questions, and will be able to look up the facts compiled in these tables. The carbohydrate foods are set out very clearly, so that it is easy for the patient to substitute one kind of food for any other. The weight of different foods which contain 5 g. of sugar, together with the details of the way in which the food is prepared, are very convenient. The amounts of protein and fat are also given; the calorie value is omitted although it can be easily calculated. The second table gives the amounts of protein in the different foods which do not contain any sugar. The knowledge of the amounts of sugar in the different alcoholic beverages will be useful for patients with mild diabetes. The instructions for using the tables are clear, but their comprehension demands some knowledge of very elementary mathematics.

MORPHOLOGY AND EVOLUTION OF THE APES AND MAN.

By CHARLES F. SONNTAG, M.D., Ch.B., F.Z.S., Prosector to the Zoological Society of London and Demonstrator of Anatomy, University College. London: John Bale, Sons and Danielsson, Ltd. 1924. Pp. 364. 12*s.* 6*d.*

As Prof. Elliot Smith says in his foreword to this book, its importance depends upon the fact that it is an impartial and reliable statement of facts based upon direct observation, while it is a laborious sifting of the mass of writings dealing with the Primates. It is also more than these, for the information is conveyed in a way that makes the book pleasant to read, and any facts looked for can be found easily without wading through pages of irrelevant matter; moreover, the facts are presented impartially, opposing views are fairly stated, and a long and seemingly fairly complete bibliographical list is appended. We have read the work with interest and pleasure.

Dr. Sonntag here deals with the whole Order of Primates, a short but useful account of the lemurs, tarsius, and monkeys following a brief introduction, but the main part of the volume is given to the anthropoids. As in all works bearing on this subject, one gains the impression of marked plasticity of structure in the members of any of the groups included under the heading, in addition to the differences between the groups themselves. It is, of course, true that the human subject, especially the female, exhibits variations in structure, but apparently not by any means to the same extent as his so-called cousins. The muscular apparatus in the apes has always been a subject of great interest to investigators, and Dr. Sonntag gives a considerable amount of space to this matter. We note, among many facts of great interest to the human anatomist, that the gorilla seems to approach the human type nearer than the other anthropoids in the adult condition of the "contrahentes" of the hand, while the chimpanzee and gibbon appear in their adult states to resemble the human fœtus. A short but clear and good account of the adductors of the thigh will help to clarify the somewhat confused ideas obtaining on this subject.

Dr. Sonntag commits himself to the statement that the peroneus tertius is a "human muscle," and is absent in anthropoids; as a matter of fact, the muscle, as it is found in the human leg, has been described in these animals, and its appearance is another example of their plasticity. The occurrence of such a muscle in the chimpanzee has recently been described by Paul Hecker, and D. J. Merton in America has, within the last few months, described it in two gorillas. The accounts of the skeletal and muscular portions of the anthropoid economy are followed by those bearing on the digestive and absorptive system, circulation, ductless glands, and blood. A useful little summary of the precipitin reactions and syphilitic virulences are given here. In the description of the urogenital organs there is an account, apparently new, of the bladder of the chimpanzee, and some data about menstruation are given. The statement that copulation is *in modo quadrupedale* is not, we think, always true. The respiratory system, and a very useful chapter on the nervous system, complete the descriptive portion of the book. A summary of the main grounds for present-day views on the evolution of the Primates brings the work to an end.

The book is likely to be a work of reference on its subject for many years to come, and we recommend all who are interested in this matter to procure it.

QUAIN'S ELEMENTS OF ANATOMY.

Vol. IV., Part II.: Myology. By T. H. BRYCE. London: Longmans, Green and Co. 1923. Pp. 310. 25*s*.

THIS, the last addition to the eleventh edition of the leading English work of reference on anatomy, is a production on which all concerned, writers and publishers, are to be congratulated. We have gone through the book with pleasure and profit, finding not only a charm in the many beautiful illustrations, but coming across collected groups of data of information gathered from widely diverse sources and brought together in ways both interesting and instructive. Prof. Bryce has called in Prof. T. Walmsley's mathematical mind to deal with the action of most of the muscles in the body, and those who delight in angles and formulæ can enjoy themselves in the opening chapters of the book, while those who prefer the less exacting charms of morphological discussion will find this in profusion, interspersed with the many details of facts of descriptive anatomy. The nerve supplies of the muscles are dealt with *in extenso*, providing information which will be found of great value in all cases, and in some, we think, will be new to many readers. Most of the new illustrations, in colour, are from Mr. A. K. Maxwell's pencil, and are a prominent feature in the book. The work is one which, not taking account of its claim as a part of "Quain," is a necessity in any anatomical library.

HISTORY OF MEDICINE.

Lectures on the History of Physiology during the Sixteenth, Seventeenth, and Eighteenth Centuries. By Sir MICHAEL FOSTER. Cambridge: The University Press. 1924. Pp. 306. 15*s*.

THESE lectures were originally delivered as the Lane lectures at the Cooper Medical College in San Francisco during the autumn of 1900; they were first printed in 1901 and are now reprinted. There are some gifted writers who have the faculty of making even dry scientific subjects read like a veritable romance, and not only to the trained reader but also to any intelligent layman. Among such were Lucretius in early times, and in our own Sir Robert Ball writing on astronomy, Huxley on biology, and Foster on physiology. That sound and cultivated physician, the late Dr. James Andrew, had one reply to students who asked him the question: "What is the best book on medicine?" and it was "Foster's Physiology." The lectures now before us must have been a veritable revelation to those who heard them for the first time, for they bring before the reader a most vivid picture of the growth of our knowledge of the complicated processes of the energies of the living body.

Sir Michael Foster begins his course with Vesalius, his forerunners and followers, passing on to Harvey and the circulation, to Borelli and others on the new physics and the nature of muscular contraction, to Malpighi; and later to that curious and far-sighted thinker, Van Helmont, to whom we owe the word "gas," by which term he meant what we now call carbon dioxide, though he was ignorant of its nature. He had arrived at a very close approximation to the truth of the physiological processes of digestion and, ignoring the current teaching of his day that there are three digestions, he argues that there are six steps or digestions by which the dead food becomes the living active flesh. The active principle of all these is a ferment, and one ferment will not act in the presence of another. The first digestion takes place in the stomach, the second in the duodenum, the third in the mesenteric veins and the liver, the fourth and fifth in the heart and arteries, and the sixth "in the kitchens of the several members"; as Sir Michael Foster points out, Van Helmont had reached the conclusion that "all tissues live upon the common blood; and the power of assimilation lies in the tissue itself," or in Van Helmont's own words, "Each tissue maintains its own individual kitchen within itself." It is interesting to compare Van Helmont's doctrines with those current in the time of Macrobius 380 A.D., who, in Book VII., 4, 23, of his Saturnalia, makes Disarius, a physician, point out that the food undergoes four digestions—in the stomach, in the liver, in the veins and arteries, and in that process by which every member of the body takes up that which is necessary for it, "Haec est quarta digestio, quae in singulis membris fit, dum, quod unicuique membro datum est, ipsi membro fit nutrimentum"; a doctrine practically the same as that of Van Helmont, who may have been acquainted with Macrobius.

Other of the lectures deal with Sylvius and the physiology of digestion in the seventeenth century, with the English school of the seventeenth century and the physiology of respiration, with the physiology of digestion in the eighteenth century, with the modern doctrines of respiration and Black, Priestley, and Lavoisier, and finally with the older doctrines of the nervous system. The book is one which all should read, and it is beautifully printed and of a most convenient size. We have noted only two misprints, one of which is on p. 136—namely, "nimium" instead of "minium," an instance of a commonly occurring error both in MSS. and in typography; there are the well-known variant readings in the Te Deum of "fac cum sanctis tuis . . . . numerari," and "fac . . . . cum sanctis . . . . munerari." Perhaps this may explain why the compilers of the Catechism when they wanted to express in a kind of shorthand the words "whatever it may be," put down in answer to the query "What is your name" the expression "N. or M."

Annals of Medical History. Vol. VI., No. 1, March, 1924. New York: Paul B. Hoeber. Pp. 142. $2.50.

DR. Packard, the editor of these Annals, may congratulate himself upon this number which is full of good things. Dr. J. W. Courtney supplies an excellent paper upon that curious member of our profession Dr. Guy Patin, Dean of the Paris Faculty of Medicine. Dr. O. Larsell writes an appreciation of Retzius, the Swedish anatomist and anthropologist. Dr. H. M. Brown gives us a translation of the treatise, De Venenis of Peter of Abano, author of the "Conciliator differentiarum philosophorum," by which work he earned a prosecution for heresy. An interesting paper by Mr. C. E. A. Clayton, librarian to the Manchester Medical Society, upon Peter appeared in The Lancet of April 11th, 1908. The treatise on poisons was first printed at Mantua in 1472, and Dr. Brown deserves the thanks of all those interested in old medical lore for having made it easily accessible, for it is very good reading. Dr. J. F. Ballard reprints a paper read before the Boston Medical History Club in January, 1923, called a Descriptive Outline of the History of Medicine from the Earliest Times to 600 B.C., and Dr. W. R. Steiner supplies a paper upon the Conflict of Medicine with Quackery. We are surprised that he makes no mention of William Clowes, the Elizabethan surgeon, who wrote against quacks and shady practitioners in the most vigorous and uncomplimentary language. An excellent paper is that by Lieut.-Commander W. M. Kerr, of the Medical Corps, U.S.N., on Elisha Kent Kane, M.D., whose name is inseparably connected with that of our own explorer Sir John Franklin, for Kane went upon the Grinnell expedition fitted out by that large-hearted American to search for Franklin in 1850–51, and again in 1853–55, when he was in command. The fate of Franklin was not made clear until McLintock's expedition in the *Fox* (1857), when papers were found in a cairn descriptive of the failure of the expedition and containing an account of Franklin's death in 1848. Editorial articles, correspondence, and reviews conclude an admirable number.

Sexualreform und Sexualwissenschaft.

Edited by Dr. A. Weil. Stuttgart: Julius Püttmann. Pp. 286.

This is a collection of lectures delivered by various medical and legal men at the first international conference on sex matters held at Berlin in 1922. The book illustrates a diversity of views of all aspects of a difficult subject. The English reader will find much that is interesting and sound, but will unhesitatingly reject some of the extreme views expressed.

Psycho-Analysis and Everyman.

By D. N. Barbour. London: George Allen and Unwin. 1923. Pp. 191. 6*s*.

This is a somewhat bald and certainly unconvincing account of psycho-analytic theory, written for the public, and not encroaching upon the domain of medicine. It has the distinction, amongst the flow of similar books, of presenting the subject with no attempt to smooth out the difficulties of accepting the theory, or to fit it into the writer's own pet psychology. In an appendix, however, he gives an interesting and curious explanation of what he calls the myth of the Holy Ghost, in which his personal speculations find free play. The book seems to be a product of reading and contemplation rather than of experience.

Exercise for Health and Correction.

By Frank D. Dickson, M.D., and Rex L. Diveley, M.D., Kansas City, Missouri. London: J. B. Lippincott Company. 1923. Illustrated. Pp. 127. 8*s*. 6*d*.

This little book, which is profusely illustrated by a series of excellent photographs, is intended as a manual of home exercises. From a scientific point of view it leaves very much to be desired, and the claim made on the cover that "this manual is of the greatest value to physical directors [and] doctors . . ." is hardly justified. The statement, for instance, on p. 89, that "the bend is entirely in the pelvis" is one which would not seem to be anatomically correct.

The first section deals with bed exercises, intended primarily for the patient who has been debilitated for some time. The last exercise prescribed is double leg-lifting over the end of a plinth, and is one which, repeated five times, would tax severely even a gymnast in training. Many of the "sitting-up exercises" are less strenuous than some of those described as "bed exercises."

The value of the regular performance of exercises such as those described in this book is well recognised, and, in so far as it stimulates town-dwellers to acquire the habit of doing them, it will serve a useful purpose.

Collected Papers on Beri-Beri.

By H. Fraser, M.D., D.Ph., Deputy Commissioner of Medical Services, Ministry of Pensions; and A. T. Stanford, M.D., M.R.C.P., D.P.H., Director of Government Laboratories, F.M.S. London: John Bale, Sons and Danielsson, Ltd. 1924. Pp. 103. 7*s*. 6*d*.

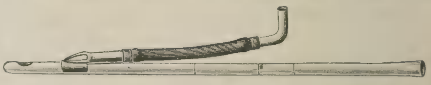
This series of ten papers consists of studies from the Institute for Medical Research of the Federated Malay States carried out by the authors from 1907 onwards. Of these ten papers three have already appeared in The Lancet. The book contains several excellent photographs illustrating experiments, together with coloured illustrations of various samples of rice-grain as seen under the microscope. These collected papers form the seventeenth publication in a series of studies made at the Institute, and they have been reprinted without alteration from their original form. The usefulness of the compilation, however, might have been increased by the inclusion of a general index. Concurrently with the authors' work biochemical research in Europe and America has done much to solve the problem of deficiency disease; and beri-beri, at least, is well on the way to extinction.

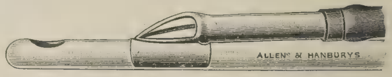
Dr. W. C. Rivers's "Sexuological Essays" (reviewed in The Lancet last week) can be obtained from the author, Worsboro' Bridge, Barnsley.

New Inventions.

AN EXPIRATORY ATTACHMENT FOR ENDOTRACHEAL CATHETERS.

The value of adequate provision for expiration in endotracheal insufflation anæsthesia has already been referred to by me in The Lancet (1923, ii., 228). The metal appliance here illustrated is the outcome of further experiment, and has proved particularly useful in the case of children in whom the glottis will not accommodate an expiratory rubber tube of sufficient calibre at the same time as a catheter. A series of five sizes has been constructed for attachment respectively to catheters Nos. 23, 20, 16, 13, and 9 (French). A special catheter with a maximum calibre has been made to fit the smallest tube. The metal clip which holds the catheter is split longitudinally and is composed of metal which combines to a certain extent the qualities of malleability and resiliency. Some adjustment is therefore possible and necessary, as catheters of different makes may vary slightly in a given size. The expiratory attachment is connected, as shown, with a piece of rubber tubing. At the point where the latter reaches the teeth the addition of a metal elbow prevents the catheter from being bitten and at the same time directs the expiration away from the surgeon.





The tubes and special No. 9 F. catheter are made by Messrs. Allen and Hanburys, of Wigmore-street, London, W.

I. W. Magill, M.B., B.Ch., B.A.O. Belf.

THE LANCET.

LONDON: SATURDAY, JUNE 28, 1924.

THE CROONIAN LECTURES.

THE comprehensive summary of what is known about leprosy, which Sir LEONARD ROGERS has just enunciated in the first two of his four Croonian lectures to the Royal College of Physicians of London, will be accepted as authoritative. In the first he traced the history of this disease from the earliest reliable record of its appearance in Europe over a thousand years ago to its present widespread distribution. A discussion of the general conditions influencing the prevalence of leprosy and an account of the difficulties experienced, even after the isolation of the causative bacillus, in proving its communicability formed the concluding sections of this lecture. In the second lecture Sir LEONARD ROGERS considered the possible modes of infection in some detail, and suggested a plausible explanation for the acknowledged relation between its incidence and conditions of high humidity and temperature; this relation affords a good basis for the study of the prophylactic measures which he next elaborated. The third lecture was devoted to the treatment of established leprosy and dealt chiefly with the efforts made by the lecturer to search for more efficient preparations derived from chaulmoogra and allied oils long reputed of benefit in leprosy, and with the experimental grounds for his hopes that these may prove curative.

Sir LEONARD ROGERS admits that it is still too early to allow of anything like final conclusions regarding the precise value of the treatment of leprosy by sodium gynocardate and sodium morrhuate, but he claims, with justice, that the results of extensive trials in various settlements are encouraging. In the fourth Croonian lecture, which we publish in full in this issue of THE LANCET, the lecturer raises the question of the possible application of the new line of treatment to tuberculosis, on the basis that if the *B. lepræ* is destroyed by intravenous injections of gynocardates, there is some hope of inducing a similar change in another bacillus belonging to the acid-fast group. While sharing the lecturer's hopes and indeed appreciating that we may at last be setting out, under his guidance, on the right road of attack against tuberculosis, a word of caution must be said. The distress caused to sufferers and their friends from over-confidence in the possibilities of any remedy must be set against the desire, by eager praise, to encourage investigators to press forward on paths showing any foundation for hope.

Sir LEONARD ROGERS gives with scrupulous fairness the case for and against optimism and confesses freely that the experimental basis of his hopes is not unchallenged. In the recently published annual report of the Lister Institute mention is made of some attempts to test the claim that the sodium salts of various fatty acids exert a favourable and healing action in tuberculosis, in view of their action on the tubercle bacillus. The selective action of fatty acids on acid-fast bacilli is acknowledged to be striking, but investigation of the potency of a number of these acids in this respect did not indicate any marked differences between them except in the case of chaulmoogra oil derivatives, which had a decidedly greater effect in inhibiting the growth of cultures of *B. tuberculosis* than the derivatives of any other acids tested, including acids derived from cod-liver oil. Clinically, however, there is a good deal to suggest that injections of sodium morrhuate may have a specific healing action on tuberculous lesions, and, at any rate, Sir LEONARD ROGERS appears to have made out a sound case for more extensive trials of this remedy.

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THE FEDERATION OF MEDICAL AND ALLIED SERVICES.

THERE will be found in another column an account of the annual dinner of the Federation of Medical and Allied Services which was held on Friday last, June 20th, under the presidency of Sir BERKELEY MOYNIHAN. The occasion must have been a stimulating one for those concerned in the welfare of the Federation, owing to the high quarters from which they received assurances that their work should be very valuable both to the public and to those who have the charge of the health of that public. It is quite clear that persons in responsible positions are now realising that an alliance between medicine and its allied services with the public in the interests of public health contains vast possibilities for national good; it has, indeed, become necessary to the cause of national health. To render all help in forming and cementing this alliance is the programme of the Federation, which thus is placed in the gratifying position of filling a national need. No less than this was said of the Federation by more than one speaker at the feast.

But some of the kind words in which this sentiment was conveyed may possibly have been, if stimulating, also embarrassing for those who have the policy of the Federation in their direction, and for a reason which they will admit. Although a certain amount of good and practical work in various directions, most of which have been indicated before now in these columns, has been performed by the Federation, there can be no doubt that what it has done is but a small fraction of what it was assured last week by the present Minister of Health and by his predecessor was expected of it. In the life of all young bodies the position is constantly reached when aims are not balanced by performances, while the public support that would make success certain is withheld until that success, if possible, has been achieved without the public support. Of the useful and even great things which such a body as the Federation might do, acting as a liaison now between the public and the medical profession, and now between the public and national authority, few, if any, can be brought to practical issue without the public coöperation, and the recent beginning of such coöperation is by far the most promising thing in the affairs of the Federation. And by coöperation is not meant subsidy, but rather a willingness to serve. Sir THOMAS HORDER, chairman of the executive committee of the Federation, in a short sentence in a short speech, probably said all there is to be said on this position when he urged upon members of the Federation, medical and lay, the necessity at the present juncture for individual work.

Ministers of Health have come and have gone with great rapidity since the high office was first instituted, but it is worth remembering that during the short life of the Federation not less than five of them have personally welcomed the idea of a combined body which would be able to place before them the considered views of medicine, pharmacy, nursing, and the kindred activities. To some extent members of the public have endorsed the view expressed by these Ministers by giving their adherence to the Federation and forming a Citizens' Council. The result of this is that the Federation possesses within its organisation a body of men capable of meeting together and expressing by their joint deliberations views on the health of the people which could not fail to be valuable to the country; but the opportunity of expressing these views has not yet arisen in any frequent or important manner. Sir Thomas Horder has, we think, exactly indicated what is required—namely, the desirability of some individual activity by the Federation which will lead to a demand for its services both from the authorities and from the public. If when that demand comes it is met satisfactorily, the Federation need have no fear of receiving wide support from varied sources. Why should not the Citizens' Council set the Federation a definite task and underwrite the reasonable expenses in connexion with the work? All would gain by such a course, and any expenditure would be balanced and overbalanced by the economy in life resulting from the advice. The Minister of Health, at the dinner of the Federation, gave his hearers an apposite lead when he indicated the waste due to the employment of unsuitable persons in particular occupations. The big employer who should call in the Federation to assist him here would be a veritable pioneer in the cause of national health.

RABBIT FEVER.

It is an old maxim that no one is likely to diagnose a disease of which he has not heard. This has often become evident when a disease hitherto unrecognised by the profession is first described and defined. As soon as this has been clearly and convincingly done it is apt to turn out that the "new disease" is not literally "new" at all, and has, perhaps, long been recognised under various names in different localities. Such appears to be the case with the infective disease in man to which the name of "tularæmia" was given by Edward Francis of Washington in 1922. The infecting micro-organism was then shown by him to be identical with the *Bacterium tularense* described by McCoy and Chapin in 1912 as the cause of a fatal plague-like disease of the ground-squirrel (*Citellus mollis*) in Tulare County, California. The bacillus is very minute, 0·2 to 0·3 by 0·3 to 6·0 microns in diameter, and is found in the blood and in enormous masses in the organs of diseased animals, especially in the liver and spleen of inoculated mice. In cultures which can be obtained on special nutrient agar containing egg or cystin the bacilli are slightly larger. There seems to be little doubt that six human cases following bites of horse-flies described by Pearse in Brigham City, Utah, in 1911, were the same disease, and Francis has collected 100 cases from the same district. It has now been recognised in at least ten States of the Union, including places on both the eastern and western seaboard. Moreover, evidence of the disease appears to be not uncommon in rabbits brought for sale to Washington market, and human infection is known amongst the market men by whom it is vulgarly called "rabbit fever." One of the cases recorded by Francis in 1923 had apparently contracted the disease in the market by handling dead rabbits, and the patient volunteered the diagnosis. The first human cases shown to be due to *B. tularense* were suffering from a form of illness, known locally as "deer-fly fever," occurring amongst harvesters in Utah. They were probably infected by the bite of a species of *Chrysops* which transmits the disease from the "jack-rabbit" to man. More than one species of wild rodent is known to be naturally subject to the disease; the name "jack-rabbit" is given to several species of *Lepus*, and in addition the ground-squirrel and the "cotton-tail" *Lepus sylvestris*, which is commonly sold in the Washington market, are liable to the disease in the wild state.

Experimentally it has been found that the disease can be passed from rabbit to rabbit or guinea-pig by the bed-bug, by fleas, lice, and a species of mite. Infection takes place in animals very readily through the shaved skin, and in man the conjunctiva, perhaps mucous membranes and abrasions of the skin may also be sites of entry. So infectious is tularæmia for human beings that at Washington all the laboratory workers who were occupied with investigating the disease—six in number—became infected, and one or two of them contracted second attacks. The point where the infection enters may be the seat of a slough, but this is not always the case and no lesions may be found. The clinical course is characterised at the onset by irregular fever, which at times may reach 104° F., and by enlargement of lymphatic glands, and later by a long period of debility with slight febrile disturbance causing incapacity for any serious work, whether physical or mental. The fever may be continuously so high as to simulate enterica, but severe pains or headache are unusual. A moderate leucocytosis of 12,000 to 14,000 is the rule. The only known cases outside the United States have been those of three laboratory workers in London who were studying cultures obtained from Washington by means of animal experiments and in other ways.

Very few fatal cases are known to have occurred, but recently Dr. J. Russell Verbrycke has recorded[1] the first post-mortem examination on a human case of tularæmia in a woman of 67. A diagnosis of gall-stones and inflammation of the gall-bladder was made, and jaundice was present during the first week of illness. On the twelfth day from the onset the abdomen was opened, but no further operation was performed. Death occurred six days later. The infection in this case was no doubt contracted whilst preparing and cooking a rabbit five days before the onset, which agrees with an incubation period of about four days which had been observed in previous cases. Post mortem, the pleural cavities both contained cloudy yellowish fluid, and the lower portions of both lungs were covered with greenish-yellow lymph. Irregular, hard, discrete nodules were found throughout the lower lobes of the left lung. The liver was soft and bile-stained; the spleen large and very soft, and in its substance were many very small yellowish-white nodules, which closely resembled the nodules found in the livers of rabbits dead of tularæmia. No tubercle bacilli could be detected in the nodules in the lungs or spleen. Guinea-pigs and two rabbits inoculated from the spleen died and showed the speckling of the liver and spleen with small necrotic areas characteristic of the disease. The diagnosis in this fatal case, as also in about 20 other cases which have been observed clinically, was confirmed by agglutination of a formolised emulsion of the bacteria by the patient's serum. A positive agglutination result is to be expected about 14 days after the onset and appears to be highly specific. The usual titre reached with patient's serum is 1/100 or more, whereas control serum from other persons gives a negative result in a dilution of 1/10.

Tularæmia is therefore a widespread and serious disease of man in the United States of America, which is spread from wild rabbits to man by the bites of blood-sucking insects and also by the handling of dead animals in the market or kitchen. Its diagnosis may easily be missed, but its natural occurrence in other countries is as yet unknown.

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[1] Jour. Amer. Med. Assoc., May 17th, 1924, p. 1577.

Annotations.

"Ne quid nimis."

ROYAL COLLEGE OF SURGEONS OF ENGLAND: AN AFTERNOON RECEPTION.

THERE will be a meeting of the Fellows of the College on Thursday, July 3rd, at 10 A.M., for the election of three Fellows into the Council, in the vacancies occasioned by the retirement in rotation of Mr. W. F. Haslam, Mr. T. H. Openshaw, and Mr. Raymond Johnson. For these three vacancies there are 11 candidates—namely, Mr. W. McAdam Eccles (formerly a member of the Council), Mr. W. E. Miles, Mr. H. J. Paterson, Mr. T. P. Legg, Mr. A. H. Burgess, Mr. Victor Bonney, Mr. Wilfred Trotter, Mr. Philip Turner, Sir Charles Gordon-Watson, Mr. Hugh Lett, and Mr. G. Grey Turner. The voting papers went out to the constituencies at the end of April and must be returned not later than the morning of July 3rd.

The President and Council of the College have issued invitations to a reception at the College on the same day, when the annual exhibition of additions to the museum will be opened for inspection between the hours of 4 and 6 P.M. Cards of invitation are not required by the Fellows. In making these arrangements, the Council is reverting to a custom which was highly successful when Fellows of the College had to attend in person to record their votes. They not only attended to vote, but made a point of examining the various dissections and preparations placed on exhibition in the Council room. As very few Fellows now record their vote in person it was decided, a few years since, to hold the annual exhibition in October instead of July. By the special arrangements now made it is hoped that the annual exhibition will recover its former popularity, and that July 3rd will not only be "Election Day" for the Council but "Museum Day" for the College. On the present occasion many specimens of surgical, pathological, and anthropological interest will be on show. The additions and other selected preparations will form a special exhibit in the museum until the end of August.

DOMESTIC GAS LEAKAGE.

A REPORT of the joint committee of the Society of Medical Officers of Health and the Royal Sanitary Institute on flueless gas stoves, which has been referred to already in our columns, brings to the fore the whole question of defective gas fittings. Perhaps there is no better exemplification of the truth of the proverb that "Familiarity breeds contempt" than the carelessness of gas consumers and gas vendors as to the state of the fittings used for the supply of a useful product with deadly qualities. Do the lessons supplied by inquest after inquest convey no messages to gas companies, to plumbers, or to householders? Ground air and drain air may have been unduly blamed in the past, but the scare about these has helped us to get rid of leaky cesspools in the neighbourhood of dwellings, and to secure well-laid drains for the speedy removal of excreta and foul liquids. And, be it remembered, that here the noxious influences attributed to sewer air were certainly exaggerated. Coal-gas is much more poisonous than is the ground or drain air, but despite the sinister popularity with suicides its use has aroused no such scare. We do not want to renew the air-supply of our dwellings from drains or ground air, but we seem indifferent to gross chances of inhaling coal-gas.

Dr. E. B. Hazleton read a paper at the last meeting of the British Medical Association[1] which went to show that there was some leakage from most of the taps fixed, as they ordinarily are, on the bottom side of gas brackets, and that it was quite common to find in the morning in ill-ventilated bedrooms with such fittings carbonic monoxide present to the extent of 0·01 to 0·02 per cent. Dr. J. S. Owens's report shows that a man who breathes an atmosphere containing 0·2 per cent. of CO for four or five hours will usually die. One has therefore no difficulty in believing with Dr. Hazleton that if a man breathes night after night an atmosphere containing 1/10 or 1/20 of this amount of CO, the effects on his health may be quite serious. Dr. Hazleton's remedies are to abolish gas lighting for bedrooms and alternatively to have the tap fixed on the top of the bracket, by which plan the tap is kept by the force of gravity more or less gas-tight. Most domestic gas meters have, we believe, a clock face, one revolution of which indicates the passing of 5 cubic feet of gas, but how many householders take the trouble to use this check to leakage. One of our correspondents has had the curiosity to apply this test. He was only using gas for heating and cooking, and he found that the gas which passed the meter during the night, when no gas was being burnt, amounted to 1·4 cubic feet. His own sense of smell was poor, but his wife's was good, and she thought she smelt gas in two places. An employee of the gas company took in hand the two gas fires which seemed indicated as the sources of the leakage, which on the next night was reduced to 0·6 cubic feet. This last-named leakage appeared to be due to the failure to turn off the stop-tap of the gas cooking stove, the numerous fittings of which were evidently leaky. Except for the meter, the gas company in question possessed no apparatus for testing the tightness of the gas fittings. If the meter had still indicated a leak, they had no means for locating it.

The supply of gas is a monopoly whether it belong to a company or a local authority, and it is only reasonable that the monopolist should be in a position to guarantee the fittings by which he supplies his wares. Unfortunately, gas and water are in a different position. The water department loses by leakage, the gas department is paid at the same rate for leakages as for legitimately used gas. The competition with electricity should be, however, sufficient incentive to the gas companies to take steps to prevent their customers being poisoned. Further, the extended use of gas is one of the planks in the smoke prevention programme. The acuteness of the olfactory sense is so notoriously variable as to constitute a very feeble line of defence against coal-gas poisoning. On every ground, then, and in the interests of both vendors and consumers, we think gas departments and companies should take steps to see that only fittings of a safe type are in use, and further, that they are in a position to test, on application and in return for payment of a reasonable fee, the fittings of any customer and inform him as to whether such fittings are gas-tight and in all respects satisfactory.

ACUTE PYOGENIC PAROTITIS AND ITS DIAGNOSIS.

IN a paper by Dr. R. G. Spurling and Dr. F. W. Stewart in the *Boston Medical and Surgical Journal* for May 15th, attention is drawn to the not rare occurrence of acute pyogenic parotitis in otherwise healthy persons and to the valuable information to be obtained by catheterisation of Stenson's duct in obscure cases of swellings in the parotid region. Among 22 cases of suppurative parotitis observed during the past five years in the authors' hospital, there were four distinguished by the fact that the patients had seemingly been quite well up to the time of the first appearance of a swelling in the parotid region. Three of these cases occurred within two months—a grouping suggestive of some common cause. The authors confess to ignorance of this cause by labelling these cases as "idiopathic." With regard to the diagnosis of such unilateral swellings, they have come to the conclusion that the simplest method of differentiating pyogenic from non-pyogenic parotitis and other morbid conditions in the parotid region is to catheterise the parotid duct so as to secure material for culture and microscopic examination. Such catheterisation has been employed in the past in the course of experimental work on parotitis, but as a means of clinical diagnosis it has been much neglected. The contents of the parotid duct may not always be sterile even in health, and a positive culture obtained from this duct is therefore not an infallible sign of pyogenic parotitis. But a pure culture of such a germ as the *Streptococcus viridans* is undoubtedly of great diagnostic value, particularly if it is obtained on several occasions. The presence of pus cells in the catheter specimen is, in the authors' opinion, almost pathognomonic of infection of the parotid gland. Their procedure is simple. The catheter can be easily extemporised with a piece of glass tubing, one end of which is drawn out into a capillary tube about one millimetre in diameter, while the other end is fitted with a rubber aspirating bulb. It will often be sufficient to note whether or not the opening of the duct is inflamed and gaping, pus escaping from it when pressure is exerted on the duct and gland from without. In doubtful cases the introduction of the glass tube into the duct and the aspiration of a little of its contents for a bacteriological examination should materially help towards a correct diagnosis. The introduction of the tube is facilitated if the ampulla of the duct is inflamed. The authors conclude that failure to examine closely the parotid duct is responsible for the majority of errors. They recommend that in every swelling of the face and neck in the region of the ear a possibility of septic parotitis should be considered seriously and a careful examination of Stenson's duct should be made.

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[1] THE LANCET, 1923, ii., 304.

PARENCHYMATOUS KERATITIS.

THE first of the monographs published in connexion with the *British Journal of Ophthalmology*, which are to be sold at a cheaper rate to subscribers to that publication, is an authoritative work on parenchymatous keratitis.[1] Although the main facts about the disease and its dependence on congenital syphilis were established by Jonathan Hutchinson more than 60 years ago, there are several matters connected with it on which ophthalmologists are not even yet in complete agreement. Mr. Holmes Spicer has made a special study of the subject for many years and this monograph, based on an examination of nearly 700 cases, is an embodiment of his conclusions.

It is universally acknowledged that the principal cause of the disease is congenital syphilis. In this series of cases either other signs of syphilis were present or a family history was obtained in 70 per cent. In the remainder there was no mention of family history or other signs, but this does not necessarily preclude the presence of syphilis. The teeth were typical or suggestive in 44 per cent. Acquired syphilis, to the exclusion of the congenital form, was found in 3·3 per cent. of the cases, more commonly in women than in men. With regard to tubercle its influence in producing typical interstitial keratitis is disputable, says the author. Mixed infections, of course, occur.

The most original part of the essay concerns the various forms of corneal opacity which are characteristic of the disease. Several figures illustrate the subject. Specially noteworthy are those of striate opacities caused by the folding of the posterior surface of the cornea, and of the curious forms sometimes assumed by the deposits, formerly called "keratitis punctata," but better "K.P.," which may be considered to stand for the more accurate description, "keratic precipitates." With regard to the age of onset, in 80 per cent. of Mr. Spicer's cases it was between 5 and 25, but a first attack sometimes occurs both at an earlier and a later age. There were three cases of infantile syphilis in which definite interstitial keratitis was present at birth, and in one case a typical first attack occurred in a man of 40 with scars of old choroiditis, so that in all probability the spirochæte had been lying latent in the cornea for 40 years. The interval between the attack in one eye and its fellow was in three-quarters of the cases less than a year, but there were many cases with much longer intervals. Two per cent. showed an interval of more than five years. The longest interval recorded was 26 years.

As to the relation between interstitial keratitis and injury, it has been maintained by Harrison Butler that this relation exists in as high a proportion as 20 per cent., an association which, if it could be established, would be of great importance in view of claims for compensation. A history of injury, however, can often be found if it is looked for, without the true relation being anything more than accidental, and Mr. Spicer agrees with most authorities in putting the true ratio in which an injury had an important influence in determining an attack in an eye predisposed to the disease at not more than about 3 per cent. With regard to relapses, they occurred in 9 per cent. of the cases, in one case as much as 30 years after the first attack, the probable cause being that the cornea was incompletely scavenged by leucocytes in the primary attack. A question of some interest is whether or not inherited syphilis confers immunity to the acquired disease. As a rule no doubt it does, but there are instances of patients with interstitial keratitis where it did not. According to our present knowledge, the *Spirochæta pallida* is the cause of the attack. Though it has not been found in the human cornea, it has been found experimentally in the cornea of monkeys. A certain number of cases occur, however, in which syphilis can be excluded. These cases are generally called by a different name—"keratitis profunda." They often occur in middle-aged men addicted to alcohol; generally, only one eye is affected, and the disease runs a comparatively mild course.

As to treatment, the author decidedly inclines to conservative methods. He even warns us against using too much atropine on the ground that atropine irritation is not infrequent. Injections with the arsenical compounds he reserves for severe cases where there is much irritability of the eye and in which the general condition of the patient calls for it. The greatest importance is attached to measures calculated to improve the general health, for which reason a stay in hospital is often attended by the best possible results. In minimising the importance of direct anti-syphilitic treatment the writer runs counter to considerable recent opinion.

COPPER AND BRASS IN HOUSEHOLD WATER SERVICES.

EVERY householder from time to time has trouble with his water-supply. If the water is hard deposits form in the kettles and boilers and hot-water pipes; if very soft the water may act upon the material of which the service pipes are constructed, the water may become tinted and discoloured by the iron taken up and deposited, or zinc or lead may be taken into solution, and in the latter case there is serious danger of injury to health. The Copper and Brass Extended Uses Council has recently issued a "Treatise" for the information of water authorities, engineers, architects, builders, plumbers, and all interested in houses and house construction, in which they assert that practically all these troubles can be avoided if copper and brass only are used in the interior water fittings, boilers, tanks, pipes, &c., and they also contend that the cost is only a little over that of lead, and only from 18 to 38 per cent. more than iron, and that when the upkeep is taken into consideration there is an actual economy in the use of copper. Their arguments are very specious, but are well worthy of consideration, especially in districts where soft moorland waters are used; but unfortunately the "Treatise" has been compiled by an engineer and presents the case only from the engineering point of view. No chemist seems to have been consulted with reference to the action of water on such pipes, nor has the view of any medical authority been obtained on the aspect from the health point of view, a course which is suggested by their admission that acid moorland waters do act upon copper. Moreover, the few words said about the action of water on lead and copper requires revision by the chemist. It is stated that "Lead is itself easily oxidised, and the oxide in general forms a protective coating. It is the organic acids in the plumbo-solvent water which, dissolving the layer of lead oxide, subjects the metal to successive attacks. Copper corrodes little, and, so far as it does, the product is protective." These statements, to say the least, require confirmation, and unless they can be confirmed, which is doubtful, the evidence from the chemical and medical point of view has no value. The Council would be well advised to give this matter its serious attention, as the subject is one of very great importance. No reference is made to the use of tinned copper pipes, save to say that the tin used to line such pipes often contains lead. This used to be the case, but it is alleged that the difficulty of coating the copper with tin free from lead has been surmounted. If such is the case tinned pipes would appear to be preferable to copper. The use of copper alone, as suggested, does not appear to have as yet received any practical trial, and such a trial with waters of various types is absolutely essential before their use can be recommended with confidence.

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[1] Parenchymatous Keratitis: Interstitial Keratitis; Uveitis Anterior. The Gifford Edmonds Prize in Ophthalmology. By W. T. Holmes Spicer. London: Geo. Pulman and Sons, Ltd. With 41 figures. Pp. 63. 5s.

MICROSPORIDIA AS THE CAUSE OF RABIES.

THE ætiological agent of rabies has been the subject of numerous researches, and several claimants are in the field without any one of them being generally accepted at the present time. The latest suggestion is that of Y. Manouelian and J. Viala,[1] who describe a protozoon of the microsporidia genus in the tissues of affected subjects. The possibility of a protozoal parasite was long ago suggested, and the question whether the well-known Negri bodies, small corpuscular formations found within the cells of the nervous system, especially in the large cells of the hippocampal region, are to be looked upon as protozoa, which is the view of many authorities, or merely as post hoc degeneration products of the diseased cell, which is perhaps the more favoured view, has not yet been definitely settled. The findings of Manouelian and Viala undoubtedly have their origin in the disputes which have arisen over the causation of lethargic encephalitis. Discordant findings in the experimental investigation of this disease in rabbits has led to the discovery of the existence of a spontaneous form of encephalitis in the rabbit, whose existence was first described in this country by F. W. Twort. C. Levaditi, whose positive results with human encephalitis material have been at variance with the results of C. Kling, H. Davide, and F. Liljenquist in Sweden, investigated the lesions in the rabbit's brain in the spontaneous disease, and has described the formation of small spore-containing cysts of a parasite which he has named *Encephalitozoon cuniculi*. The step from these findings to the suggestion that a like cause may operate in so similar a disease as rabies is a short one, and such a suggestion was actually made by Levaditi soon after the description and figuring of the parasite we have just mentioned. He put forward the view that the Negri bodies are spore-containing cysts which represent only one phase in the life-history of a protozoal parasite of which the individual units are, at another stage, so minute as to be ultra-microscopic and filtrable. Failure adequately to observe the intimate structure of the Negri bodies is, in his opinion, due to the impermeability of the capsule to chromatin stains, a property which can be modified by the use of acid fixatives. This suggestion has apparently borne fruit in the work of the two French investigators, which has appeared in a recent number of the *Annales de l'Institut Pasteur.* By the use of a special technique, which involves the employment of an acid-fixing solution, they have demonstrated the presence of small elongated or oval bodies, occurring in various parts of the nervous system, both accompanying and appearing independent of the Negri bodies, which they resemble in being usually intracellular, but in size are very much smaller. The figured appearances of these "parasites" is very striking, as is also their similarity to the bodies described by Levaditi in the encephalitis of rabbits to which we have just alluded. The relationship of the newly described formations to the Negri bodies is not clear, the authors of the present paper considering the latter to consist of accumulated and degenerated masses of the smaller parasite. The parasites are also described as being present in the salivary glands. It is not possible to pronounce any definite opinion upon this interesting piece of work, but, whilst waiting for further results, it may be pointed out that the newly described parasite does not in any way appear to resemble bodies figured by Noguchi in 1913, which he then claimed to have cultivated by the special technique associated with his name and suggested as the causal factor of rabies. It is also interesting to note that on that occasion the claim was associated with the then prominent investigations upon poliomyelitis, whilst the present one comes obviously in the train of the investigation of encephalitis.

THE STORY OF "SAY NINETY-NINE."

ON June 24th Sir William Hale-White, as President of the Royal Society of Medicine, and Lady Hale-White received the guests at a social evening, given by the Society to welcome medical men from overseas now in London. After cordially greeting the overseas visitors the President proceeded to give a short address on the history of percussion and auscultation. He pointed out that nothing that doctors do has seized the popular imagination more than their habit of tapping the chest and listening to it with a stethoscope, to learn whether the sounds of breathing and of the heart are natural and whether the patient's voice is properly conducted. In the "Mystery of Edwin Drood," Durdles, from tapping a slab, concludes that under it is an "old 'un crumbled away in a stone coffin." In Kipling's "Marklake Witches" is a description of how Jerry listened with a wooden toy trumpet to Rene's chest. Wendell Holmes relates what happened from using a stethoscope with a fly in it. The pages of *Punch* contain many pictures in which the stethoscope appears. By noting how his spoken voice is carried through the chest by a stethoscope to the trained ear a physician can obtain further evidence confirmatory of the percussion findings as to whether a patient's chest contains air, solid, or fluid. Since the words "ninety-nine" are produced in the larynx they are most suitable for this purpose and this phrase has become very popular. There exist "Say Ninety-nine" cough lozenges, "Say Ninety-nine" stays and "Say Ninety-nine" boots; jokes about "Say Ninety-nine" are common on the stage and in comic papers. Sir William Hale-White recalled the fact that Auenbrugger was the first, in a little Latin book containing only 7000 words, published in 1761, to teach what may be learned from percussing the chest. He recorded that the chest of a healthy person yields a note resembling the stifled sound of a drum covered with a thick cloth. He explained also how to strike it to obtain the best results, and discussed the varying note at different parts of the chest and the differences of note according as the chest contains air, solid, or fluid. Auenbrugger's work remained unnoticed until in 1788 Corvisart began to practise the method and in 1808 published a translation of Auenbrugger's book. Fortunately Laennec, who was born at Quimper in 1781, studied under Corvisart and it was to him that the introduction of percussion in medicine was chiefly due. He lived at Nantes with his uncle, William Laennec, who superintended his education in medicine at the hospital there, protecting him from the horrors of the Revolution and the parsimony of his niggardly father. He left for Paris in 1801 and continued his medical studies there, taking his degree in 1804. He lectured constantly on morbid anatomy, which subject he was the first to raise to a science; he not only gave admirable descriptions, but correlated the conditions found after death with the signs and symptoms observed during life. In spite of wretched health and many family troubles he worked extraordinarily hard, conducting a large fashionable practice, studying languages, making post-mortems, and lecturing to those who came from all over the world to hear him. In 1816 he announced his discovery that it was possible to listen to the chest with a stethoscope. In August, 1819, he published his famous "De l'Auscultation Médiate," containing precise and original descriptions of clinical symptoms and post-mortem appearances. Many of these referred to conditions previously unknown, of which the most celebrated was his demonstration that tubercle is a new formation, and that phthisis is tuberculous. Laennec described all the multitude of physical signs that may be recognised with the stethoscope, and in his first chapter explained what may be learned from listening with the stethoscope on the chest to the patient's spoken voice. From this chapter in this book arose our practice of telling the patient to say ninety-nine. Sir William Hale-White illustrated an absorbing account of the story of Laennec's life with many pictures of the scenes among which this great doctor worked, lived, and died.

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[1] Y. Manouelian and J. Viala: Encephalitozoon Rabei: parasite de la rage. Annales de l'Institut Pasteur, vol. xxxviii., No. 3, March, 1924.

A HOME FOR CHILDREN WITH RHEUMATIC HEART DISEASE.

Kurandai, Hartfield, Sussex, was opened three months ago by the Invalid Children's Aid Association as a home for children suffering from rheumatic affections of the heart, boys being taken up to 7 and girls up to 14 years of age. There are three main open-air wards, two facing south, in which the children's beds are placed, each ward having its own bathrooms attached. The whole front of the sheds is open to the garden, but some shelter can be secured on that side, when necessary, by means of shutters. There are also two small rooms on the ground floor of the house with large windows. The children receive regular education by two trained teachers, and their games and exercise are arranged according to their capacity. The nursing staff consists of the matron, a sister, and six nurses. Fifty children can be taken and 48 are actually in residence, including a few cases of chorea. A garden party was given at Kurandai by the I.C.A.A. on June 21st, when Sir John Broadbent explained lucidly to the assembly the need for such a home. He pointed out that rheumatism was very prevalent in this country, and that in childhood it attacked the heart rather than the joints, giving rise to lesions of the valves and muscular walls of the heart. Lesions of the valves impaired the mechanism of the heart as a pump, and certain changes took place in the cavities and walls of the heart which were in part an effort by Nature to counteract and overcome the difficulties entailed by the valvular lesion. For the development of these changes a long period of time was often necessary, during which the child should be kept more or less at rest and under supervision. Even more important was the injury to the muscular wall of the heart, which might result from rheumatism, as this damaged the propulsive mechanism. As a result of rheumatic pericarditis the tonicity of the heart-muscle might be greatly impaired, so that it resembled perished rubber and gave way under the strain of its ordinary work; hence ensued great dilatation of all the cavities of the heart and symptoms of heart failure. Recovery was common even in serious cases, but it was obvious that patients could not be kept in a busy general hospital for the many months of rest required, and if they returned home they might be seriously and unnecessarily handicapped for the rest of their life for want of skilled care. In this new home patients could be kept for several months if necessary, and would be regularly visited by Dr. J. W. Prince, of Hartfield; periodically by a member of the consulting staff.

Proof of the value to fitting cases of such a home is afforded by the encouraging results obtained at the Edgar Lee Home, Stonebridge Park. This is a home founded for boys with rheumatic heart disease by the Invalid Children's Aid Association in 1918. Since its inception 327 cases have been admitted. The boys on leaving are advised as to the nature of the work they can safely undertake, and the Association endeavours to keep in touch with them afterwards. At a medical inspection last year of some of those who had passed through the home, of 39 boys only three were considered to require further treatment. Dr. F. J. Poynton, who also spoke to the guests of the I.C.A.A. at Kurandai, pointed out that children with rheumatic heart disease are unsuitable for the ordinary convalescent home where children are recovering from some surgical operation or minor illness. They are high strung, and the damaged heart requires much care. Those without special opportunities for investigation have not the slightest conception of the frequency of rheumatic heart disease. Dr. Poynton noted that of 140 deaths at the Hospital for Sick Children, Great Ormond-street, from heart disease, 90 were due to rheumatism and all were in children under 12 years. It was not, however, the fatal cases and the totally incapacitated children that this home would help, but those cases who had passed through one or more attacks and had, as a result, hearts weakened or permanently damaged in slight degree. These children, he said, could lead useful, if restricted, lives provided they were given time to get strong hearts, that their hearts were tested by gradual increase in physical exercise, and their education continued. They should return to their homes with an indication as to their physical capacities, and report to their hospitals or medical supervisors. At this home the object would be to train hearts to renewed health and strength, to keep minds active and happy, to increase our knowledge of the power of the heart for recuperation, to learn more of the life-history of rheumatic heart disease, and to take a practical and living part in the national study of the prevention of rheumatism and its complications.

THE ROYAL SOCIETY CONVERSAZIONE.

A CONVERSAZIONE was held at Burlington House on June 18th, when Sir Charles Sherrington, the President, and Lady Sherrington received a numerous company. Many interesting exhibits were shown, and during the evening Prof. Lucien Bull, of the Marey Institute, Paris, gave two demonstrations of recent developments in high-speed cinematography. His beautiful slow films illustrating the flight of birds, and the equally graceful movements of a dancer, gave great pleasure. Among the exhibits Captain C. Diver and Prof. A. E. Boycott, F.R.S., demonstrated the results of breeding experiments with the snail *Limnœa peregra*. Whereas most snails are typically coiled in a right-handed spiral, occasionally left-handed examples are found. Breeding from a sinistral race of these animals records have been obtained for some 600 families (about 53,000 snails), and it is apparent that a definite system of inheritance is being followed. Dr. T. S. P. Strangeways, Dr. R. G. Canti, Dr. M. Donaldson, and Dr. F. G. Hopwood demonstrated living cells growing in vitro under the influence of radium. The internal cytological structure was displayed by the use of dark-ground illumination. A large collection of permanent tissue-culture preparations, illustrating the effect of exposure to X rays upon the different phases of mitosis, was also shown by Dr. Strangeways. Sir Almroth Wright, Mr. A. Fleming, and Dr. L. Colebrook demonstrated new methods for the exploration of bacterial disease, and for the study of the effects of treatment. The preparations shown illustrated the new technique which Wright and his colleagues have elaborated in recent years. Mr. A. Eidenow, Dr. Leonard Hill, F.R.S., and Mr. A. Webster showed a method of measuring ultra-violet radiation. It consists in the determination of the degree of bleaching brought about in a solution of acetone and methylene-blue contained in standard quartz tubes.

A Royal Commission has been appointed to inquire into the existing law and administrative machinery in connexion with the certification, detention, and care of people who are, or are alleged to be, of unsound mind. The Commission will consider the question of the treatment of mental disorder without certification, and has the following personnel, experts in lunacy, it will be seen, having been omitted :—The Right Hon. H. P. Macmillan, K.C., Lord Advocate of Scotland (chairman) ; Earl Russell ; Lord Eustace Percy, M.P. ; Sir Thomas Hutchison ; Sir Humphry Rolleston ; Sir Ernest Hiley ; Sir David Drummond ; Mr. W. A. Jowitt, K.C., M.P. ; Mr. F. D. Mackinnon, K.C. ; Mr. H. Snell, M.P. ; Mrs. C. J. Matthew and Miss Madeline Symons. Mr. P. Barter, of the Ministry of Health, will be secretary.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Capt. D. W. Hewitt to be Surg. Rear Admiral.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col and Bt. Col. F. McLennan retires on retd. pay, and is granted the rank of Col.

The undermentioned Lt.-Cols retire on retd. pay : A. D. Jameson, A. R. Greenwood.

R. A. Roth to be temp. Lt. whilst employed as a Dental Surg.

Maj.-Gen. J. R. McMunn, late R.A.M.C., has been apptd. Hon. Surg. to the King, vice Maj.-Gen. E. M. Pilcher, late R.A.M.C., retd. ; and Maj.-Gen. S. F. St.D. Green, late R.A.M.C., has been apptd. Hon. Physician to the King, vice Maj.-Gen. W. W. O. Beveridge, late R.A.M.C., retd.

TERRITORIAL ARMY.

Capt. A. F. Lee to be Major (Prov.).

Lt. E. H. Mayhew to be Capt.

J. Ledingham (late Tank Corps) to be Lt.

Capt. H. J. G. Wells, R.A.M.C., vacates the appointment of Div. Adjt. 49th (W. Riding) Div.

ROYAL AIR FORCE.

F. F. Anslow (temp. Lt. Dental Surgeon, General List, Army) is granted a temporary commission as a Flying Officer, on attachment to the R.A.F.

Squadron Leader H. B. Porteous ceases to be seconded for duty with the South African Air Force.

INDIAN MEDICAL SERVICE.

Capt. H. K. Rowntree to be Major.

Capt. Hem Chandra Barua relinquishes his temporary commission and is permitted to retain the rank of Capt.

DEATHS IN THE SERVICES.

Lt.-Col. B. B. Connolly, C.B., R.A.M.C. (retd.), died on June 20th at Brighton. He qualified with the L.S.A. Lond. in 1869, took the M.R.C.S. Eng. in the following year, and graduated in medicine and surgery at Cambridge in 1891, having been an exhibitioner at Gonville and Caius. He joined the medical department of the Army soon after qualifying, and served with the Jowaki expedition of 1877–78 (medal with clasp) in the South African War, 1879, and with the Egyptian expedition 1882–84. He was present at the battle of Tel-el-Kebir (medal with clasp and bronze star). For his services in the Soudan he was promoted to surg.-maj., and was mentioned in despatches. For services rendered during operations in S. Africa he was promoted to colonel. During the late war he was A.D.M.S. for Sussex.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXVII.—TREATMENT OF CONJUNCTIVITIS.

WITH regard to the treatment of conjunctivitis in general, the following points should be noted. (1) The infectivity of the different forms varies, but the patient should always be advised in bathing the eyes to use small pieces of lint which can be burnt after use, and periodically to boil droppers, eye-cups, &c. (2) The eye should not be covered, as by doing this the secretions are retained and the conjunctival sac is converted into an efficient incubator. (3) Cocaine should not be used to abolish the pain as the effect is only transient, and prolonged use of this drug has a deleterious effect on the cornea. Adrenalin may at times be useful to produce temporary blanching of the conjunctiva, but it should be employed only on special occasions for cosmetic reasons. I have known of cases of chronic catarrhal conjunctivitis perpetuated by the use of this drug, the inflammation ceasing when a simple boric lotion was substituted for the adrenalin. (4) In all cases of ophthalmia neonatorum it is advisable to have a bacteriological examination of a swab from the conjunctiva, and in other cases this should be done when possible before treatment is instituted.

Monocular Conjunctivitis.

Treatment of monocular conjunctivitis with lotion and ointments is usually of little avail, and much valuable time may be lost if a simple examination is not made at the outset. This examination should exclude : (1) Dacrocystitis, by pressing over the lacrymal sac and seeing whether any regurgitation of pus occurs from the lacrymal puncta ; (2) the presence of a foreign body, by everting the lids and inspection of the conjunctival sac, and by examining the cornea with a corneal "loupe" ; (3) the presence of ingrowing lashes by a careful inspection of the lid margin.

Catarrhal Conjunctivitis, Acute and Chronic.

The acute form is usually due to the Koch Weeks's bacillus and epidemic in character, but is sometimes caused by other organisms. Frequent cleansing of the conjunctival sac is essential. This is best effected by warm boric lotion or, if this produces irritation, by warm normal saline. Since the infection is a surface one, it is advisable to hasten the removal of the superficial epithelial cells of the conjunctiva by means of silver nitrate, which is used in a strength of 5 or 10 gr. to the ounce of distilled water, according to the severity of the case. It should never be dropped into the eye for fear of injuring the cornea, but should be painted on the everted palpebral conjunctiva by a wisp of cotton-wool wrapped round a glass rod. Some ophthalmologists neutralise the silver nitrate by subsequent painting with saline ; in practice, however, the amount of sodium chloride in the lacrymal fluid seems sufficient to produce this effect. The applications should not be repeated for 24 hours in order that the conjunctiva may rid itself of the necrosed superficial cells and regenerate the new epithelium. A little bland, unirritating ointment, such as boric vaseline, should be smeared at night along the edges of the lids to prevent their adhesion and allow the muco-purulent discharge to escape. Should the patient be unable to attend daily for silver nitrate, applications of a 10 per cent. solution of argyrol or other organic silver preparation may be ordered for use three or four times daily after the lotion. It is milder than silver nitrate, but since it causes some superficial degeneration, the patient should wash out the argyrol with lotion after it has been in the eyes for three minutes, otherwise small rouleaux of desquamated cells form in the conjunctival sac and may cause considerable discomfort. This washing, moreover, diminishes the liability to argyrosis—i.e., staining of the conjunctiva by the silver. Since this condition if it arises is usually permanent, it is advisable, even with the precaution mentioned above, not to use any silver preparation for longer than three weeks.

Chronic catarrhal conjunctivitis is always a troublesome condition to treat. In the first place, any misplaced eyelashes, lacrymal obstruction, and errors of refraction must be treated. A slightly everted lower lid when the inferior punctum does not drain the lacus lacrymalis may perpetuate the symptoms; it is usually advisable to slit up the duct and remove a small triangular piece of its posterior (conjunctival) wall to avoid the constant epiphora. A plastic operation on the lid may be necessary in some cases. It should be ascertained whether the patient is exposed to irritant vapours, travels often in smoke-laden railway carriages, &c. A careful examination of the upper part of the cornea should be made, in order to exclude pannus, and of the under surface of the upper lid to exclude the presence of a horizontal scar in the subtarsal sulcus. Either of these conditions indicates old trachoma and necessitates a change in treatment. Among local applications, a lotion containing zinc sulphate gr. i., acid boric gr. x. ad ℥ i., is frequently of service. The zinc sulphate may be found more effective if used separately in the form of drops (gr. i. ad ℥ i.) and the boric acid combined with some astringent such as liq. hamamelidis dest. ♏ xxx. ad ℥ i. The conjunctiva may become accustomed to the use of any particular drug, and it is well to have some alternative to the zinc sulphate, such as alum gr. ii. ad ℥ i., or glycerine acid. tannic. ♏ viii. ad ℥ i.

Angular conjunctivitis is a variety of chronic catarrhal conjunctivitis due to the presence of a specific diplobacillus and exhibiting characteristic signs. It yields readily to the use of zinc sulphate drops, gr. ii. ad ℥ i., instilled four times daily, and an ointment such as the following: Ichthyol gr. ii., zinc oxide gr. iii., lanoline ʒ i., vaseline flav. ad ʒ ii., applied to the lids at bed-time. It is very important, however, to correct any errors of refraction, and as relapses are frequent the treatment should continue for a fortnight after all the symptoms have abated.

Purulent Conjunctivitis.

The course of this is modified by the age of the patient, and it is customary to describe that occurring in the new-born child as ophthalmia neonatorum. It is worthy of note that only 60 per cent. of the latter class are gonococcal in origin, the remaining 40 per cent. being pneumococcal, streptococcal, &c.; the last-named types may have just as serious effect on vision as the former. The principal indication in ophthalmia neonatorum is to prevent infection of the cornea and the formation of ulcers. It is not sufficiently well known that St. Margaret's Hospital, Leighton-road, Kentish Town, London, is a special M.A.B. hospital for the treatment of this disease; mothers and babies are taken in together when possible, as children usually do better if breast-feeding is continued. In a bad case the conjunctiva is thoroughly washed out every hour with cold eusol 1 : 7, and a drop of a solution of acriflavine in castor oil 1 : 1500 instilled afterwards. If treatment can be instituted before the cornea is ulcerated, it is possible to avoid this complication altogether. When the patient is at home a daily application of silver nitrate 2 per cent. should be made. Secretion should be frequently wiped away from the lid margins with swabs soaked in pot. hyd. perchlor. 1 : 8000, and the conjunctival sacs washed out from an undine with a similar lotion. A skilled nurse will be able to evert the lids for this purpose, and an effort should be made to have this done every two hours while the discharge is profuse. A daily inspection of the cornea must be made in case any ulcers should form. It is well on first seeing the case to use lid retractors for this purpose, for undue pressure on the eyeball may cause perforation of a deep ulcer. In adults the course of the disease is more severe than in infants. If only one eye is involved, every effort should be made to save the other by keeping the patient in bed—in a well-ventilated room—making him lie on the affected side, and by covering the second eye with a Buller's shield. A daily prophylactic instillation of some organic silver preparation in the unaffected eye is advisable. The diet should be liberal and the patient's general health considered. In the first stage the pain may be relieved by leeches to the temple, the application of cold compresses, and the frequent use of a cold boric lotion. Sedatives, opium, aspirin, &c., should not be withheld. If the lids are very tense the external canthus should be freely divided with scissors. When the stage of suppuration occurs, treatment with silver nitrate and frequent bathing with warm boric lotion are indicated. The attendants should wear gloves and goggles when carrying out the treatment.

Phlyctenular Conjunctivitis.

Phlyctenular conjunctivitis occurs almost exclusively among hospital patients whose general health and surroundings are poor. Should the disease extend far on to the cornea, it may entail serious consequences. The treatment must be constitutional as well as local. The best thing is to get the child into the country and order a tonic such as sy. ferri phos., good and regular food, forbidding sweets in any form. The tonsils and adenoids frequently require removal. Local treatment consists in bathing the eyes with boric lotion, followed by the application of hyd. ox. flav. gr. iii., liq. calcis ♏ x., vaseline flav. ad ℥i., or some other form of yellow oxide ointment, three times daily. It is again important to correct any error of refraction.

Trachoma.

Trachoma may commence as an acute catarrhal conjunctivitis; more usually, however, the onset is insidious. When the granulations are numerous the eye is thoroughly cocainised, or the patient given a general anæsthetic, the everted tarsus gripped between the blades of suitable expression forceps—e.g., Grady's, Tyrrell's, &c.—and the contents of the follicles forcibly expressed. The forceps should be pushed as far into the fornices as possible. After expression the everted lids are brushed with a solution of perchloride of mercury in glycerine (1 : 100) and the sacs are then washed out with boric lotion, boric vaseline being put between the lids. When the follicles are on the tarsal conjunctiva they are often too hard to be expressed with forceps. They may then either be touched with carbon-dioxide snow for 20 seconds (taking care that the frozen area thaws before it is allowed to come into contact with the cornea), or they may be scarified with a Beer's knife, the contents being scraped out with a small Meibomian curette.

There is usually much reaction after these procedures, and iced compresses will be required, also frequent bathing with cold lotion. The subsequent treatment is the same as in milder cases—namely, daily application of copper sulphate stick to the conjunctiva of the lids and fornices. This should be kept up for six weeks or so, when the frequency may be diminished to twice a week, and later even to once a week. It is frequently advisable to change from copper sulphate to 2 per cent. silver nitrate, and occasionally to drop all caustic treatment for a week or two, using only a mild astringent lotion such as boric acid and zinc sulphate. The disease is of long duration, and the average time for cure at the M.A.B. trachoma school, Swanley, Kent, where treatment is carried out under the most favourable circumstances, is 18 months.

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Special Articles.

THE VIRUS OF FOOT-AND-MOUTH DISEASE.

(FROM OUR DUTCH CORRESPONDENT.)

IN view of the great importance of the isolation of the virus of foot-and-mouth disease by Prof. Paul Frosch and Prof. H. Dahmen, which was announced in THE LANCET of May 10th, 1924, the Dutch Government invited these workers to give a lecture and demonstration of their discoveries at Utrecht on June 16th. The Minister of Home Affairs, Mr. C. H. Ruys de Beerenbruck, in an introductory address, pointed out that foot-and-mouth disease had become an economic disaster in many countries. Now that the virus had been isolated the outlook was more hopeful, although no practical result could be expected as yet.

PROF. PAUL FROSCH (RIGHT) AND PROF. H. DAHMEN.

The Method of Ultra-Microphotography.

Prof. Frosch began his demonstration by pointing out that it had long been realised that the causative agent of foot-and-mouth disease must be very small, ultra-visible and filtrable. But not a single researcher succeeded in cultivating that germ or in making it visible. The basis for his own attempts to cultivate and photograph the virus was formed by his researches into the morphology of the agent of contagious bovine pleuro-pneumonia (infectiöse Lungenseuche der Rinder). This germ was also invisible, although it had long been possible to cultivate it both on solid and liquid media; Prof. Frosch, in this connexion, called to mind the work of Metchnikoff, Nocard, and Dujardin-Beaumetz. It was necessary to make use of the ultra-microscope and ultra-microphotography. Dark-ground illumination yielded no results. Hitherto ultra-microphotography had been not a means of research, but only a method of registration. Prof. Frosch made use of an ultra-microscope, constructed by Köhler at Jena. Instead of ordinary light with a wave-length of $0{\cdot}550\mu$, he first used blue light ($\lambda = \pm 0{\cdot}40\mu$), and finally ultra-violet light ($\lambda = 0{\cdot}275\mu$). In this way the power of the lenses used became twice as strong. This ultra-violet light was obtained by burning cadmium in the spark of an electric high-tension current. The light which then radiates is intercepted by a quartz prism; the spectrum thus formed consists of a narrow yellow and green-blue zone, and a very wide ultra-violet invisible zone. These ultra-violet rays are intercepted by a lens of quartz glass and conducted to the ultra-microscope, all lenses of which are also made of quartz glass; to it a photo-apparatus is fixed.

Ultra-violet light cannot be seen, still less can it be focused clearly. Work had to be done practically in the dark; this was a great difficulty which could only be conquered after examination of long series of the same object with different focusing. Prof. Frosch showed on the screen a great number of micro-photographs of different trial objects, studied by him in order to master the technique. Thus the ultra-microphotographs of unstained white blood corpuscles showed the nuclear structure far more clearly than does a stained preparation under the ordinary microscope; some white blood cells also showed distinct granulations. He then demonstrated many series of ultra-microphotographs of the causative agent of contagious bovine pleuro-pneumonia. At first Frosch did not succeed in photographing this micro-organism. He therefore concluded that either the agent was too small or it was present in too low a concentration. All attempts to increase the concentration ("Anreicherung") were unsuccessful until he hit on the idea of photographing those cultures only which were grown on solid media. Many difficulties connected with experiments on liquid media then disappeared. Once he had got hold of this idea he managed to obtain fairly good results with blue light and a relative degree of magnification, and he easily contrived to make the organism clearly visible by means of ultra-microphotography. The agent of contagious bovine pleuro-pneumonia was then seen to be not a bacterium but a hyphomycete (*Sprosspilz*): it does not propagate by means of division but by budding, like yeast. Therefore it was called *Micromyces peri-pneumoniæ bovis contagiosa*. Prof. Frosch also succeeded in finding the virus in the smear-preparations from lungs of animals which had suffered from this disease. Thus the way for the ultra-microphotographical research of the micro-organism causing foot-and-mouth disease had been prepared.

Methods of Cultivation.

At this point Prof. Frosch paused in his demonstration in order to enable Prof. Dahmen to explain his methods of cultivation, for it was only after Prof. Dahmen had succeeded in cultivating the virus of foot-and-mouth disease on a solid medium that Prof. Frosch was able to photograph it.

Prof. Dahmen then gave a summary of the experiments to obtain cultures of this filtrable virus made before and after the war. Until now none of them could be called successful. The last attempts were those made by Prof. W. Pfeiler, who, however, did not publish his method of cultivation nor the composition of his media; for this reason it had not been possible either to confirm or to dispute his claims. Prof. Dahmen himself had tried a great number of media. In some cases turbidity had resulted; this had been noticed also by Pfeiler[1] and Titze,[2] and looked upon by them as caused by the virus. The turbidity proved, however, here, as in contagious bovine pleuro-pneumonia, to be the result of a precipitation of albumin. This became apparent when it became possible to isolate the agent; the fluid remained turbid but was not infectious. Prof. Dahmen then examined the fluid from the aphthæ of animals suffering from foot-and-mouth disease. He came to the conclusion that the virus soon died in that fluid, and that its death was hastened when the temperature at which the liquid was kept was allowed to approach that of the animal body. From this observation he drew the conclusion that the fluid in the blisters was not, as Titze, among others, had asserted, an ideal medium for the foot-and-mouth disease virus, but, on the contrary, a reaction product of the body which serves to make the agent innocuous. At first he thought that he had to deal with the d'Herelle phenomenon, and although no trace of the presence of a bacteriophage was found, yet this hypothesis had a great influence on his further researches. The task was now to separate the virus from the blister fluid or at least from the noxious substances contained therein. After many fruitless attempts to achieve this by means of animal carbon, starch, red blood cells, &c., he eventually succeeded in effecting the isolation by diluting the blister liquid with physiological salt solution, and by centrifuging it very quickly for one-half to two hours (up to 3000 revolutions per minute). At the bottom of the test-tube a residue was formed; the upper part of the liquid which remained turbid could be separated by means of a capillary pipette. The residue remained infectious whereas the supernatant fluid had lost its infectious properties. This was the first step on the road to success. The second step was the success of the cultivation tests on solid media. After having tried many of these the best results were obtained with Martin broth, with 3 per cent. agar, 2 c.cm.; horse serum or some other animal serum, 2 c.cm. The mixture was made liquid by means of heating it at 50–55° Celsius, and was put into a test-tube and left to solidify in a slanting position. The infectious material was smeared on this medium. Only after six days was there visible a very fine substance, which appeared to consist of numerous colonies of the size of a red blood cell (7–8μ). Once it had been cultivated on this solid medium it was easy to continue cultivating the virus on various liquid media if desired.

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[1] Mitteilungen der Tierseuchenstelle der Thüringer Landesanstalt für Viehversicherung, 1922.

[2] Berliner Tieraerzliche Wochenschrift, 1922, 37.

After having succeeded in cultivating the agent on solid and liquid media under similar growing conditions, the observers were able to infect experimental animals with the fifth, thirteenth, and twenty-third subcultures. In all these experiments they followed the method of Waldmann and Pape,[3] which consisted in rubbing the infective material onto the back of the metatarsi of guinea-pigs with skin scarification. The primary blister (aphthæ) symptoms then appeared after 24 hours. The secondary symptoms (secondary blisters and salivation) appeared after three to four days. In most cultures the virulence appeared to diminish, but could again be brought up to a high level by means of passage through an animal. Some strains, however, retained their virulence. Infection tests on cows were equally successful. Prof. J. Waldmann, on the Isle of Riems, had enabled Dahmen to experiment on the fluid from the blisters of pigs. In consequence of this there were now available six guinea-pig strains, two cow strains, and two pig strains, which were regularly cultivated and of which the twenty-sixth subculture had already been obtained. The guinea-pigs artificially infected with this disease proved to be immune against a generalised infection after the symptoms had disappeared. Immunising tests on cows had also been made on a modest scale. Naturally veterinarians and farmers were greatly interested in these tests. All that could be said at present was that the preliminary results were favourable; the time was too short to enable any conclusive results to be obtained.

The Virus Photographed.

At this stage Prof. Frosch resumed his demonstration and discussed the ultra-microphotography of the virus of foot-and-mouth disease, which was a far more difficult problem than that of the virus previously photographed. The attempt had only become possible after Prof. Dahmen had succeeded in cultivating the agent on a solid medium. Macroscopically, after five to six days' cultivation it was hardly possible to see the fine substance, but microscopically numerous small colonies, the size of a red blood-cell (7–8μ), were visible. More was seen as the magnification was increased and the wave-length of the light used decreased. It was, however, always necessary to take many photographs, because of the impossibility to focus sharply. It finally appeared that this virus was neither a hyphomycete nor a protozoön, but a real bacterium. Its manner of growth on the solid medium had already made this seem probable. The virus proved to be a short bacillus. Direct measurement was impossible, but the length had been estimated at 0·1μ. More detailed calculations were being made.

Both speakers had communicated their discoveries at meetings of the Berliner Microbiologische Gesel-schaft of April 7th and May 19th,[4] and had proposed to call the new bacillus the *Loeffleria Nevermanni*.

Confirmation.

The German Department of Agriculture, with whose help this research was made, had now given consent to the complete publication of all particulars and technical details. At the request of both researchers, a committee of six was formed to examine their discoveries. This committee consists of Prof. H. Titze and Prof. F. Giese of the Reichsgesundheitsamt, Prof. H. Kleine and Dr. H. A. Gins of the Institute Robert Koch, and Dr. Lührs and Dr. Richter of the Heeres Veterinär: Untersuchungsamt. This committee was supplied with material of the sixth and twenty-sixth subculture, and Prof. Kleine had been able to state on May 19th that the infection tests with this material gave positive results.

Discussion.

Prof. Dr. H. Remmelts, director of the Dutch Veterinary Service, who was in the chair, thanked the Minister of Home Affairs and Agriculture, on the part of the meeting, for his presence, and Profs. Frosch and Dahmen for coming to Holland, and congratulated them on their researches. Dr. D. A. de Jong, professor of comparative pathology at the University of Leiden, asked whether Profs. Frosch and Dahmen intended to continue to work on the valuable discoveries—on which he congratulated them—since no definite results with regard to the struggle against foot-and-mouth disease, appeared to have been obtained. Dr. L. de Blieck, professor of parasitology, infectious diseases, and bacteriology at the Utrecht Veterinary College, asked Profs. Frosch and Dahmen their opinion of the cultivation method of Pfeiler, and of the results obtained by the latter, and also of the cell-inclusions (Zelleinschlüsse) described by Dr. Gins.

Reply.

Prof. Dahmen, in reply, said that he could not and would not take upon himself the responsibility of positively answering the question whether immunisation was now more possible than it had been hitherto. Many experiments during a long period of time would be needed to solve this problem. As far as the experiments of Pfeiler were concerned, Prof. Dahmen informed the meeting that Pfeiler now claimed the priority of the discovery of the foot-and-mouth disease virus. Prof. Dahmen did not want to claim this priority for himself in case Pfeiler should really prove to have cultivated the causative organism. The claim could only be examined when Pfeiler published his method and the composition of his medium, which he had hitherto refused to do.

Prof. Frosch, in reply, said that the value of their discovery should be neither over- nor under-rated. As for the cell-inclusions of Gins, Gins has never pretended that these were the agents of foot-and-mouth disease. With Prof. Pfeiler's collaboration his claims could be investigated, even without publication of his method of culture or the composition of his medium, if he would allow his cultures to be inoculated on to the media of Frosch and Dahmen; if the cultures grew, then his claim for priority could be established.

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[3] Berliner Tieraerzliche Wochenschrift, 1920, 519; 1921, 349.

[4] Berliner Tieraerzliche Wochenschrift, 1924, Nos. 15, 21; and the Deutsche Tieraerzliche Wochenschrift, 1924, Nos. 15, 21, 22.

Prof. Dr. Remmelts, in thanking the speakers, pointed out that while the practical application of the discovery was still uncertain, the prospects which the discoveries of Frosch and Dahmen had opened out in microbiological research were anyhow of outstanding value.

BRITISH HOSPITALS ASSOCIATION:

ANNUAL CONFERENCE.

THE fourteenth annual Conference of the British Hospitals Association was held on June 12th and 13th at Victory House, Leicester-square, Sir Arthur Stanley, the President of the Association, being in the chair. Some 260 delegates from all parts of the United Kingdom were present.

On the opening day the delegates were formally welcomed to London for the Conference by Sir Humphry Rolleston. In the course of his address, Sir Humphry Rolleston said that the voluntary hospital system was characteristic of the British temperament. Individual effort had done incalculable work in raising the standard of clinical medicine to its recognised high position. Formerly the voluntary hospitals had acted individually, but that Association had brought them into close contact and enabled them to work as a whole. Instead of no policy or individual and varying policies, it should now be possible by means of those Conferences to have a united and strong policy on the various knotty problems arising between the staffs of the voluntary hospitals and the hospitals themselves, in connexion with the receipt by the hospitals of direct contributions for benefits conferred.

Dr. F. N. Kay Menzies read a paper on the

Future Relations of the Voluntary Hospitals to the Municipal Authorities.

Having passed in review the remarkable developments which have taken place during the last 15 years in the relations between voluntary hospitals and public health and education authorities, he pointed out that in London alone at least four-fifths of the treatment available for the sick was provided for out of rates and taxes. Those services were likely to expand in the near future in certain directions which hitherto had either not come within the scope, or only slightly so, of local authorities, such as municipal maternity hospitals, treatment of certain diseases of childhood—for example, chorea, rheumatism, infantile paralysis, &c., and advanced cases of tuberculosis. Further developments in the Poor-law medical service might prove to be a big factor in determining the ultimate relationship of the voluntary hospitals and the municipal authorities. Probably the future development of the Poor-law infirmary was in the direction of a municipal hospital. Were those infirmaries to become merely competitors with the voluntary hospitals, or were they to work in coöperation with them? He believed that every right-thinking man and woman in the country was beginning to realise that the present position with regard to the prevention and treatment of disease, whether by voluntary or public authorities, required review. The time had, in fact, come to make a careful, comprehensive, and detailed survey and study of the situation. He could not see any reason why such a scheme when drafted should not provide: (1) for the preservation of the best features of the present voluntary hospital system; (2) for adequate accommodation, equipment, and finance of the hospitals generally; (3) for the geographical distribution of hospitals so as to avoid unevenness and overlapping; (4) for a closer relationship between voluntary hospitals themselves, between voluntary hospitals and the various classes of hospitals provided by local authorities, and between general practitioners and all the various institutions which treat the sick.

Lord Hambleden, in opening the discussion, said that Dr. Menzies's paper had been both interesting and suggestive. He agreed with Dr. Menzies that the voluntary hospitals would have to face the question of their future relations to the municipal authorities within a comparatively short time. He (Lord Hambleden) did not know whether a further development of the health insurance scheme would lead to a larger demand for institutional treatment. If it did it would, of course, lead to the necessity of a very large increase in the hospital beds throughout the country. One important point to be considered was whether, supposing grants were made either by the local authority or the central government to the hospitals, they were likely seriously to affect the voluntary subscriptions. Personally, he doubted whether such grants, if given, would be likely to affect the teaching hospitals in the same way as they might hospitals which had no medical school attached to them. It was important that they should get to know what was likely to be required of the voluntary system in the future in regard to hospital accommodation, and how best that system could take a part in any scheme which might be devised; but it would be a very great mistake to suggest that they would not work in with any general policy which the Government and the country might decide to pursue.

Lord Armstrong set out the experience of Newcastle-upon-Tyne, where the people gave very liberally to the Royal Infirmary. There was, he said, a great prejudice on the part of patients against going into the Poor-law hospitals, and he was afraid that prejudice was pretty general in the north of England. The corporation of the city were giving his hospital £500 a year for looking after the street accidents, but that was as far as they could assist them under their present powers. On the other hand, the Manchester Infirmary got £8000 a year from the city. What was wanted was a short Act of Parliament removing the restriction imposed by law against local authorities subscribing to hospitals.

Mr. H. M. Crouch (Bath) moved, and Dr. C. E. S. Flemming (Bradford-on-Avon) seconded, the following resolution, which was passed: "That the time has come to make a careful, comprehensive, and detailed survey and study of the hospital situation in the country, and to formulate an adequate and coördinated scheme for the prevention and treatment of disease throughout the whole country; and that the Council of the Association be instructed to consider how the survey can best be made, and to give all the assistance in its power to any body that makes it."

In the afternoon Sir Wilmot Herringham spoke on the

Training of Nurses.

He recalled that the first serious training school of nursing in England was set up at St. Thomas's Hospital in 1860, in commemoration of Miss Nightingale's work in the Crimean War. In 1877, when the speaker went to St. Bartholomew's Hospital as a medical student, the first regulations for the training of nurses were introduced. The period of training was one year, the age of admission was 20, and two inspectors were employed—one from the medical, one from the surgical side. In 1882 the period was extended to three years, and the age of admission was raised to 23, an examination now being instituted at the end of the first year, and another when the course was completed. In 1914 the admission age was lowered to 22, in 1918 to 21, and in the following year a committee reported on the nursing curriculum, with the result of producing the present nursing curriculum of the General Nursing Council. He well remembered the old type of sister, a very capable and practical person; very often kind and compassionate, but quite unfitted to do the work required of the modern nurse. In one respect, however, modern nursing was rather at a disadvantage in comparison with the former time. Formerly many educated women took up nursing, largely because that was practically the only means for them to earn a living. As there were now many business and professional openings, it was not surprising that fewer of these women entered the nursing profession, and nursing was the poorer for their absence. The General Nursing Council had to determine what policy ought to be adopted in regard to the training of nurses. The syllabus which the Council drew up was, in essence, that which had been obtaining for three or four years at the best training schools. When the Minister was asked to sanction this syllabus, as a result of Parliamentary pressure he declined to do so. That turned out to be a fortunate circumstance, because if the Minister had sanctioned the scheme it would have become law, and not only would it have become compulsory on the schools, but, like all legal things, it would have been unchangeable, and the last thing those who formulated the scheme wished was to stereotype the method of education provided. In both cases when the syllabus was submitted to an outside body—in one case a general meeting of nurses and in the other the Ministry of Health—it was the outside body which demanded additions, not the Nursing Council. Some might object that the syllabus embraced too much theoretical knowledge, that it was unnecessary to teach the nurse anatomy, physiology, pathology, and bacteriology. It was true that Miss Nightingale's "Notes on Nursing" was one of the best books ever written on nursing, and contained very little pathology and no bacteriology. It consisted in injunctions to nurses to be kind and sympathetic, not despotic or tyrannical; incidentally, of all the despotic ladies who ever made men shake in their shoes, Miss Nightingale was the most relentless. Though she laid down a standard of excellence which no period could excel, Sir Wilmot Herringham combated the idea that the modern nurse should have no theoretical training; she should know of the ubiquity of micro-organisms and of their virulence, and this aspect of medicine could not possibly be omitted from her course of training.

In the course of the discussion on Sir Wilmot Herringham's address, Dr. H. L. Eason referred to the affiliation of the larger hospitals with some of the smaller ones for the purpose of giving their nurses a wider experience. For example, Guy's Hospital was being affiliated for this purpose with the Royal Sea Bathing Hospital of Margate, with the Cancer Hospital, and with the Evelina Hospital for Children. Dr. Eason discussed also the report on Nursing and Nursing Education in the United States,[1] published by the Rockefeller Foundation. The schedule outlined in this report was far too extensive for the proposed two years' course. American visitors were very critical of the training of nurses in British hospitals, but they all agreed that the English nurse produced by our system was a type they could not beat.

Sir Wilmot Herringham, in reply, said that he entirely shared Dr. Eason's view of the Rockefeller report. Nursing was an art which had to be learned by patience and by practice, and could not be taught by intensive methods. In answer to other questions as to the recognition of certain hospitals as training centres for nurses, he explained that where the interests of the hospitals clashed with the interests of the public they were bound to consider the public. That was the whole gist of the case for the General Nursing Council. Every case that came up was treated on its merits.

The following resolution, proposed by Mr. John Barker (Grimsby), and seconded by Mr. Watts (Great Yarmouth), was carried: "This Conference requests the committee of the British Hospitals Association to consider the ruling of the General Nursing Council as to the number of medical beds and also medical cases at present required to obtain their certificate, and if there should not be an amendment of the rules so that smaller hospitals which do important surgical and medical work and afford adequate training can be duly approved."

At the Friday morning session, Sir Arthur Stanley again occupying the chair, a paper was read by Mr. R. J. Meller, M.P., on

Approved Societies in Relation to Voluntary Hospitals.

Mr. Meller said the relationship existing at present between that Association and the approved societies was a cordial one. There was a close affinity between their work, because the main work of the approved societies was not to pay cash benefits, but to see that every assistance was rendered to the sick and suffering. The approved societies regarded the convalescent home aspect of hospital work as of the utmost importance. The scheme of health insurance provided for only such treatment as could be given by the practitioner selected by the insured person. The hospitals not only trained the practitioners, but also enabled them to keep in touch with medical advances. The hospital stood in the same relation to the insured population as did a nursing home to people more fortunately placed, and there was now no hesitancy on the part of the mass of the people to enter a hospital. The Cave Report in 1921 stated that in the Metropolitan Police District there were 117 hospitals, in the rest of England and Wales 728, in Scotland 107, totalling 952. The number of beds available were: London 12,797, England and Wales 31,265, Scotland 8132, just over 52,000 in all. There were 15,000,000 insured people to be catered for, apart from women and children. If the contributions from approved societies could increase the number of beds available, or reduce the deficiency, there was ample justification for the support now being given. In the Cave Report it was stated: "While we hold that the approved societies are not under any obligation legally or equitably to provide the whole cost of the maintenance and treatment of their members in hospital, we are strongly of opinion that they do owe to the hospitals a large measure of support." That view, Mr. Meller said, he accepted. The group of societies with which he was connected was able, during the year 1923, to distribute £170,000 to the voluntary hospitals, and he anticipated a similar sum would be available for the present year.

Mr. G. Q. Roberts (St. Thomas's Hospital) spoke warmly of the zeal in the cause of the hospitals which had been displayed by Mr. Meller at the numerous conferences and meetings he attended. Mr. Roberts thought much more should be done by the approved societies in helping the hospitals, and it was necessary to disabuse workers of the belief that the contribution made to their hospital treatment was a defraying of the cost, especially in the cases of serious illnesses. The payments made were not insurances carrying the right of entry of the payee into a hospital. There were still many societies which did not make a hospital grant. There was a growing number of persons coming forward for hospital treatment in respect of whom no payment was received, and that was an anomaly which must be tackled. The preventive work being done in the voluntary hospitals was of increasing importance: responsible men were in charge of out-patients, for whom all the agencies of the hospital and its apparatus were enlisted.

Mr. S. R. Lamb (Sheffield) said it was found difficult to convince business men, particularly in the provinces, that in contributing to hospitals they were not paying twice over for the medical benefit received by the worker. The Prudential group had shown themselves very willing to provide convalescent service. It was said that if a patient seeking hospital treatment was not a panel patient, he must be turned away, but that would be found very difficult in practice. Many approved societies had not yet been made to understand what were their responsibilities to the hospitals. The voluntary hospital accommodation in this country for insured persons cost 7¾ million pounds per annum, and a reserve fund was being set aside of 7 millions a year.—Mr. E. C. Lindsay (Poplar Hospital) said the Friendly Societies used the Poplar Hospital more than did any other class or section of the community, and its application for help had been turned down. He asked that the executive would take the case of that hospital into consideration.—Lord Hambleden expressed his gratitude for the way in which the approved societies had acted; in consequence of that action the position of the voluntary hospitals was now much stronger than four or five years ago. It was hoped that at the next valuation the societies would be able to increase their grant, and this hope was increased by the general agreement that the voluntary system was the best for the hospitals.

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[1] See The Lancet, 1923, ii., 1203.

Mr. Meller replied that he had long realised that something additional was required to the benefits provided under the panel system. To those who thought something should have been done by the approved societies under Section 21, he would reply that in the first few years of the Insurance Act the matter was in an experimental stage, as all lives, not selected lives, had to come into the consideration. He thought it would be seen that the greatest advantage was to be secured not by giving additional cash payments, but by giving such benefits as would best conserve and improve the health of members of the societies. Not every insured person was entitled to additional benefits. Again, it must not be assumed that large reserves meant enormous profits which would never be distributed; but he could say that the improved condition of matters would probably result in the societies becoming liberal instead of conservative. A Royal Commission was to be appointed to go into the whole question of National Health Insurance, to consider its defects and its values, and to recommend, if necessary, extensions and improvements, and he urged that this Association should seek to give evidence before that Commission.

British Hospitals Association Dinner.

Lord Hambleden presided at the dinner held at the Royal Automobile Club, London, on June 19th, in connexion with the annual conference of this Association. There was a large attendance. The dinner was good, the speeches short and witty, and the guests went home at a reasonable hour well satisfied that the function had further cemented the bonds between all those interested in the hospital problem. The toast of the Association was allocated to Lord Stuart of Wortley, who praised not only the efficiency of British hospitals, but their independence of spirit. This very independence, however, made it difficult for them to find a medium of common expression and, when necessary, a means of common defence. The British Hospitals Association would presently subserve these functions; no attempt at unification would be made, but at least the first step towards collective action would be provided. The voluntary hospital system had been challenged; many of the ideals set out by those who challenged it were shared by its supporters and were undisputed, but some of them at least were not at present compatible with the national resources.

Sir Arthur Stanley, responding to the toast, referred to the superannuation scheme for nurses which would soon be adopted by all hospitals. Lord Hambleden, toasting the guests, noted that this was the first regular conference to be held in London, and expressed appreciation of the interest shown by distinguished bodies and persons in their deliberations. Sir Humphry Rolleston replied, referring gratefully, on behalf of the medical staffs of hospitals, to the efforts made by the administrative officers to cope with the many difficulties now besetting these institutions. Sir Wilmot Herringham, who also replied for the guests, said that as chairman of the General Nursing Council he appreciated the cordial coöperation of the hospitals throughout the country in the attempt to improve the training of nurses. Lord Knutsford, who proposed the health of the chairman, and Lord Hambleden, who replied, alluded merrily to the claims for support of the great institutions with which each was specially connected, and in this friendly rivalry the guests found much amusement.

VOLUNTARY HOSPITALS COMMISSION.

THE Conference of the Voluntary Hospitals Commission with the Local Voluntary Hospitals Committees was held on June 18th at the Ministry of Health, Lord Onslow, chairman of the Commission, presiding. In THE LANCET of last week we gave a brief résumé of the morning's proceedings, the principal points brought forward by representatives of the Local Voluntary Hospitals Committees in reply to the inquiry into the extent of voluntary hospital accommodation in England and Wales, and the best means of providing and maintaining it. Towards the close of the discussion, Lord Cave said he was glad to think the system of mass contribution, the contribution from workers and employers, had grown and prospered. He thought that the amount collected in that way annually would be a very considerable one. He referred to Sir Walter Kinnear's report dealing with contributions from the approved societies (which was read at the meeting by Lord Onslow), and said that this system, which now brought some £200,000 annually to the hospitals, had become a vital part of the whole organisation. A great Friendly Society had set the example in this respect, an example which had been widely followed. Referring to the need of further beds, the speaker thought that the need existed more in the case of the larger hospitals which served a large surrounding area than in the case of the small cottage hospitals which were strongly supported locally. While the inquiries are being made into the needs of each county, he thought the committees ought to take a wider view and consider not only what the hospitals wanted in the way of further beds, but what the country wanted in the way of further hospital accommodation, which at present was not sufficient. In concluding, he expressed his feeling that even if these committees were to be dissolved forthwith they had done admirable work throughout the country, but he hoped that for years to come they would continue to render useful services.

The Chairman, in summing up the discussion, considered that all the points raised would furnish most useful information for the further inquiry which the Commission was going to undertake. It was very important to remember, he said, that the hospital needs of various areas differed very widely.

At the afternoon session a discussion took place on the

Future Functions of the Local Voluntary Hospitals Committees,

which was raised by the Worcestershire and Somerset Committees. Mr. Crouch, of the Somerset Committee, said that he wished to put forward the idea that the Voluntary Hospitals Committees should regard themselves as guardians of the public in regard to hospitals generally, and he understood that the Minister of Health approved of that idea. We should not, he said, seek to criticise or interfere with existing hospitals, but we should make it our business to see what the country wanted in respect of hospital accommodation and in respect of hospital treatment, and take such steps as are reasonably within our province in order to get that hospital service provided. The Commission should formulate a policy and a detailed programme. The speaker then gave some comparison between the existing hospital position and the ideal one. Early hospital treatment would save a great deal of suffering. The whole country wanted hospital treatment, middle-class people as well as the poor, but at present it was nobody's business to get it for them. From experience in Somerset, in his opinion, in order to discover what additional accommodation was needed, it was necessary to know not what the hospitals were doing, but what they were not doing. In conclusion, Mr. Crouch said that it appeared the committees were expected to try and effect some coördination between the voluntary hospitals and the municipal and county health officers and with county institutions. Nothing could be done in that direction unless the areas to be dealt with were suitable for that work. He and his committee, therefore, put forward a resolution: "That the country be divided into effective hospital areas, and that each committee include the medical officers of health and adequate representation of the local doctors."

The Chairman said that he did not think this would be an easy matter to carry out, owing to local difficulties. He was of the opinion that the coördination of Local Voluntary Hospital Committees in the local areas must be left entirely to the hospital committees, the county committees themselves. The county committees knew their own local requirements much better than the Commission did, and he quoted a case in point from Yorkshire as an illustration.

Mr. Davis (Manchester) said that there was a lack of coördination among Voluntary Hospitals Committees, and as a result the hospitals and the community did not get the full benefits they might have expected from the committees. A centralising authority was required to bring about coördination, an authority through which the local committee might approach the Government. There was a feeling in certain important quarters, he said, that it would become necessary for the Government to subsidise the voluntary hospitals without taking over control and administration. If this came about, the need for a centralised committee would be ten times greater. The chairman then suggested that the points raised by Messrs. Crouch, Davis, and others should be brought before the local voluntary committees, and when they had been fully considered a further Conference might be held to put forward further ideas and further methods of procedure in the way of carrying on the functions of the local hospital committees. This was agreed.

Mr. Lamb (Sheffield) then dealt with the question relating to the

Contributions to Hospitals by Municipal Authorities and Insurance Organisations.

He said that business men who were asked to subscribe to the work of the hospitals were asking questions as to why it was the hospitals did not get the insurance companies to make much more generous contributions for the maintenance of the patients who, for instance, were run down by motor vehicles in the streets, and that if the patients were to go to a nursing home he believed the insurance company would pay up like lambs. He hoped that through the British Hospitals Association or the Commission a Conference might take place with those representing the largest and wealthiest insurance companies in order that a larger measure of conscience might be secured from them as to what they should do for the work of the hospitals. "We would much prefer," he said, "that they should pay something voluntarily, as an act of grace." He also suggested that the Commission might help by recommending to the Ministry of Health that local authorities be empowered to contribute, if only in their capacity of employers of labour. Referring to the surplus funds of the National Health Insurance, he said that at the last quinquennial period there was a surplus of about 15 millions, of which 7 millions was divisible, and of that sum the voluntary hospitals had not received more than half a million. Mr. Lamb then proposed: "That in view of the forthcoming quinquennial valuation under the National Health Insurance Act, the Minister be asked to receive a deputation seeking his advice as to approaching the approved societies throughout the country."

The resolution was seconded, and on the Chairman's suggestion that the proposer and seconder should consult with the Minister of Health or Sir Walter Kinnear on the matter, this was agreed.

A vote of thanks to the Chairman having been carried unanimously, the Conference then adjourned.

ROYAL INSTITUTE OF PUBLIC HEALTH.

FURTHER NOTES ON THE CONGRESS AT BORDEAUX.

The Annual Congress of the Royal Institute of Public Health was held at Bordeaux from June 4th–9th, Viscount Burnham presiding. On the evening before the Congress Sir Humphry Rolleston delivered a lecture on endocrine therapy, and both he and Sir John Bland-Sutton were awarded the honorary degree of Doctor of Medicine of Bordeaux.

Lord Burnham opened the Congress on June 9th, when the gold medal of l'Assistance Publique was awarded to him, to Sir Thomas Oliver, and to Sir W. R. Smith; the rosette d'Officier de l'Instruction Publique to Lady Bland-Sutton, Lady Smith, and Dr. Kelynack; and the bronze medal of the Bordeaux Municipality to Mrs. Werner Göthe.

Antityphoid Inoculation.—In the course of a lecture Prof. C. Achard (Paris), dealing with antityphoid inoculation of the civil population, reminded the audience of the compulsory vaccination in France of members of hospital staffs who were likely to be infected by typhoid or paratyphoid fever in the course of their duties. In 1912 and 1913 many of the inhabitants of 24 villages had been inoculated against typhoid fever with marked success. He did not recommend compulsory vaccination against typhoid of the whole of the civil population. In the course of discussion Dr. C. W. Hutt (Holborn, London) said that Prof. Achard's paper had dealt another severe blow to the theory that it was dangerous to attempt artificial immunisation of a population in the presence of an epidemic. The absence of danger was also borne out by the results of the preventive antidysenteric inoculation carried out in Egypt during the war. Prof. Hope (Liverpool) believed in vaccinating armies and persons who were about to proceed to districts where the danger of typhoid was great, but not in vaccinating the civil population generally. Success had been attained in England without recourse to this measure.

Tuberculosis.—Several papers dealt with tuberculosis, including one by Prof. Léon Bernard (Paris) on pregnancy and tuberculosis. The discussion, in which Prof. Besançon took part, revealed a partial belief among the French in the value of preventive measures such as the use of masks by tuberculous mothers when suckling and the careful washing of the nipple, but the firmest belief was placed in separation of the infant from its mother. The value of *pouponnières et centres d'élevage* was stressed by Prof. Mouisset, who also pleaded for the provision of a preventorium attached to each dispensary for children from 5 to 13 years of age, and Dr. Bushnell (Plymouth) agreed that these would be useful.

Dr. Pierret (La Bourboule) praised the efficacy of the arsenical water of his town as a means of combating tuberculosis, and Prof. Leuret (Bordeaux) urged the need of teaching consumptives a craft while still in sanatoriums. The chief point made by Prof. Courmont (Lyons) was that the dispensaries of the Calmette type were playing a large part in the diminution of tuberculosis in Lyons. Arrangements existed at the central wash-house in this town for the disinfection and washing of the linen of all cases of open tuberculosis.

Propaganda.—Dr. René Sands, Secretary-General League of Red Cross Societies, spoke of the three-fold duty fulfilled by the Red Cross—education, coördination, and experimentation. These functions were discussed by the delegates. Lord Burnham regretted that in spite of the existence of important international organisations there was not adequate coördination of international health activities.

During the discussion of the paper on propaganda of Dr. Daley (Blackburn), Sir Humphry Rolleston referred to the need for a balanced programme in connexion with health instruction; he did not approve of lectures confined to one topic such as tuberculosis or venereal disease. It was evident that in the north of England the labouring classes would attend such lectures in large numbers, especially if they were shown a film. Dr. Annis (Greenwich) said that he would like to learn the best way of advertising these lectures because the cost per head of those who attended often worked out at a relatively very big figure.

The Treatment of Organic Nervous Disease.—From a paper by Dr. J. Roubenovitch (Bicêtre) it emerged that the Conséil Générale of the Seine had initiated as an experiment at the asylum for the department a special hospital for the treatment of patients suffering from organic nervous disease, neurosis, and psychoses who could not be certified as insane on admission. Of 1019 in-patients only 157 had been sent on to the asylum.

Industrial Hygiene.—Dr. C. S. Thompson (Deptford), discussing the health of the clerk, showed that the order of superiority in health was insurance, bank, civil service, railway (all of whom had to pass a medical examination), law clerk, the worst being the commercial clerk. Tuberculosis and neurasthenia were common among law and commercial clerks. The remedies were, in his opinion, more thorough inspection of offices as regards ventilation and lighting, both natural and artificial, trade unionism, and a pension fund. The contribution of Dr. Clark Trotter (Islington, London) indicated the part played by the municipal health department in connexion with industry and industrial welfare. He said that to discover workshops in Islington a watch was kept on advertisements in local newspapers. He complained of the absence of legislation to prevent the almost surreptitious establishment of a factory in residential parts of an area. Factory hygiene was retarded by the present unsatisfactory medical arrangements. In a discussion on the protection of workers from the effects of carbon monoxide, Prof. Rochaix (Lyons) advocated the use of electric stoves for drying materials after the use of various dressings in connexion with dyeing, leather work, and millinery.

Women and the Public Health.—The best attended section was that dealing with women and the public health. Madame Saint Luc gave an account of the training and work of a health visitor (visiteuse), whose duties in France comprise visiting the homes in connexion with maternity and child welfare; the health visitors also carry out minor nursing duties for babies, such as giving enemata; they attend the clinics of the children's hospital, where they administer subcutaneous injections of sulpharsenol or even intramuscular injections of bismuth salts to children and mothers. The course of training for this position lasts for three years. The health visitors are paid by the Fédération des Œuvres, which is subsidised by the city and the department. At Bordeaux six health visitors put in an attendance either weekly or fortnightly at the 30 different institutions carried on by the various œuvres. Assistance at the school medical inspections is afforded by pupil health visitors. A separate set of nurses, all of whom possess a diploma, now visit the homes of tuberculosis patients. They do not work under an Œuvre but are paid direct by the municipality and department. In these smaller towns—e.g., Soissons—the health visitors undertake all branches of health visiting. Each of the V.D. clinics in Bordeaux has a whole-time nurse; in the smaller towns in France these nurses visit the homes to endeavour to get the husband or wife and the children to come up for treatment if necessary. The œuvres appear to be heavily subsidised in France either by the municipalities or the State, and there seems to be a general feeling that these numerous activities should be combined and more directly controlled by the State. Besides the health visitors, there are officials, called *assistantes sociales*, who also visit the homes and do most of the work which the more developed English organisation has grouped in the duties of the female staff of public health departments; they do not carry out minor nursing. These *assistantes sociales* are trained nurses and are paid by the State. Several hospitals in Paris have these officials, the creation of the posts being due chiefly to the efforts of Profs. Calmette, Léon Bernard, and Armand Delille.

In the course of communications on the work of the hospital almoner, made by Miss Cummins (London) and Miss Lyall (Glasgow), it was stated that two years' training arranged by the Institute of Almoners would be extended as soon as possible to three years. The almoner does not visit the homes, visits being paid by the public health staff, district nurses, and Charity Organisation Society visitors, working in coöperation with the almoner. Papers of interest in other sections were one by Mr. Saint Sernin, recommending the use of chloropicrin and Tissot's apparatus for the destruction of insects; this substance can be used without danger of fire; it has no action on metals, furs, fabrics, or colours. Prof. Neveu Lemaire (Lyons) delivered a suggestive paper on the prophylaxis of bilharziasis, discussing the possibility of destroying the molluscs, the hosts of the larval stage of the parasite. Prof. F. Mésnil (Paris) considered that at present this means of prevention was impracticable.

Visits.

Prof. Bergonié, who has lost his right arm as the result of his pioneer work in radiography, showed the delegates over the Centre Régional Contre le Cancer de Bordeaux et du Sud-Ouest. Inoperable cases of cancer are treated by X rays and radium, of which they possess 185 mg.; when the centre was first opened operable cases were treated, but as the results obtained were no better than those achieved by surgical operations the procedure was abandoned. At the Military, Naval, and Air Force Hygiene Exhibition, among the appliances shown was a Clayton's disinfecting apparatus. In a small pavilion the technique used for preventive inoculation against typhoid and paratyphoid fevers, dysentery, and gas gangrene were shown, together with clear diagrams depicting the results achieved. Visits were also paid to day nurseries, the Florence Nightingale School for the training of health visitors, the hygienic institutions at Arcachon, including the Basin, the saline baths at Biarritz, and the sulphurous baths at Luchon.

THE FEDERATION OF MEDICAL AND ALLIED SERVICES.

THE annual dinner of the Federation was held at the Connaught Rooms, Great Queen-street, London, W.C., on June 20th, with Sir Berkeley Moynihan, the President, in the chair. There was a good attendance of members, and among the guests present were Mr. Wheatley (the Minister of Health), Sir William Joynson-Hicks, Sir Arthur Robinson, and Mr. St. Loe Strachey.

Sir Berkeley Moynihan, in proposing the toast of the Prime Minister and of the Minister of Health, said that happily the Federation had no political attachments, and that the annual dinner had always been attended at different times by members of the Government whatever party was in power. He read a letter from the Prime Minister, who was to have been present, but was prevented by the visit of Mr. Herriot. In this Mr. Ramsay MacDonald described national health as "the foremost asset of the nation," and approved the aim of the Federation "to make available for all sections of the community a body of expert scientific opinion ready to lend both to the Government and to the public generally deliberate judgment in all questions affecting health policy."

The Federation, said the chairman, placed in the forefront of its faith the nationalisation of knowledge of the state of the nation's health and of the best means of remedying it. Most members of the medical profession had, he said, been compelled to realise that they could not advance much further without coördination, and that there were some occasions when an alliance with the public in the interest of public health was necessary. During the last general election there was some discussion as to the principles of trading and the best methods of providing raw material, "but so far as I have been able to learn," went on Sir Berkeley Moynihan, "the most important of all raw material was never mentioned in that discussion from beginning to end; for the most important raw material in every industry is the baby. Sir George Newman, in one of those pamphlets which are not only a mine of information but also a model of fine English, has told us that there are in this country 1,000,000 children unfitted to receive the education which the State provides because of disabilities which are preventable, and in the war we learned that there were 1,000,000 men unfit to be placed in any category also because of disabilities which were preventable. It is true that such men can be treated in the hospitals of this country, but the hospitals of the country are unable to accommodate them. The whole question of hospitals in this country is ripe for revision and review. They are our noblest heritage. They have been built, endowed, and equipped by the self-imposed taxation of benefactors in days gone by; but auto-taxation ceases to become a pleasure, and may become a peril if the State takes from you all that you can spare—and then a little more. And I would ask with regard to our hospitals whether there are any hospitals which deal with *all* the people who seek and need their aid, whether there are hospitals which have *all* the adequate equipment that they require, and if any hospitals have an opportunity of carrying out those measures of research, which is some of the most important of the work done within their walls?" Sir Berkeley Moynihan concluded an eloquent address by referring to the high ideals of the Prime Minister and to the practical attainments and strong character of his colleagues. Referring to the guests, he added that among them were men who held a very distinguished place among those who were serving their country.

Mr. Wheatley, on behalf of the Prime Minister and the Government, and particularly on behalf of the Ministry of Health, expressed his pleasure at the healthy state of the Federation. If fully realised, its objects would serve a very useful purpose—namely, that of bringing into a common channel the experiences and medical opinions of people engaged in medical practice, general and special, and in the public service of the country, in order that they might be used for the national good. A discussion in the House of Commons had that morning impressed on his mind the importance of a subject which he thought was only being glanced at for the first time—viz., the value of organised effort to direct young people into the industries for which they were best fitted. The volume of disease which must arise year by year through people predisposed to certain diseases entering industries for which they were unsuited must, he said, be appalling, and it was only by the organisation and correlation of the work of the medical profession and by transmitting the resulting knowledge to the Government of the country that we could hope even to get to the threshold of that better national organisation which would enable us to use our national stock of health to the utmost.

Sir William Joynson-Hicks, who proposed the toast of the Federation, said that the whole idea of caring for the public health was a product of recent times; the old system was remedial, to-day it was preventive. All our factory legislation, a great deal of our mine legislation, the inspection of every kind of institution, the medical care of our sailors and soldiers, and all forms of sanitation, had arisen more or less definitely during the last 25 years, and we had to realise that that great work which had begun and which had been continued so successfully was progressing in an ever-increasing degree. Public opinion was now ripe for increased action in all the directions he had referred to, as well as in the work of the welfare of children, and in the whole position of the maternity question because politicians were now beginning to realise the raw material value of human life. Do you know, he asked, what it costs to produce a man? No man or woman in this country who reaches the age of 21 was produced for less than £500, and a skilled workman was worth £5000 at the lowest estimate; yet we were allowing these men to slip through our fingers. They represented the best capital of the nation, and yet many were allowed to contract every kind of disease and thus render themselves unfit to carry on their work or to make themselves a profitable commodity for the great community which had given them birth. That was the problem the Federation was called upon to deal with, and would be called upon to deal with still more in the next few years. The casualties of peace were greater than the casualties of war. To take an example, the disease of tuberculosis claimed roughly 1000 fatal casualties per week, and it would be worth untold wealth and effort to get rid of a disease of that kind. They who were, or who might be, responsible to the Government of the nation looked to the Federation to help them in dealing with the prevention of disease, as well as with the important question of insurance. The medical profession were brought into more direct contact with the people than were the Ministers of the Government, and some kind of liaison was wanted. That liaison was formed by the Federation.

Sir Thomas Horder, chairman of the Executive Council, who responded, paid a warm tribute to the memory of his predecessor, the late Sir Malcolm Morris. The aims and ideals of the Federation, he said, were warmly approved by past and present Ministers of Health, and he might perhaps even speak of the future, for possibly a future Minister of Health was among them. As chairman of the executive body he said that the course before them was that of individual effort, by which alone in the early days potential assets can be converted into realities.

Capt. Elliot then proposed the Health of the Guests, coupling with the toast the name of Mr. St. Loe Strachey, the editor of the *Spectator*.

Mr. Strachey, in reply, interested the audience with an appreciation of the wonderful intuition displayed by Shakespeare in his description of the medical mind and medical attitude. He gave definite reasons for holding that Shakespeare must have been acquainted with the writings of Hippocrates, and particularly with the famous Hippocratic Oath.

At intervals during the evening Mr. Frederick Dawson played delightfully upon the piano.

IRELAND.

(From our own Correspondent.)

The Irish Medical Association.

The postponed annual general meeting of the Irish Medical Association was held in the Royal College of Surgeons in Ireland on June 18th. Senator W. O'Sullivan, the President, was in the chair, and delivered an address. He said that at the moment there were being discussed different matters of much concern to the Irish medical profession. One of these was the question of medical legislation, and another the question whether or not there should be a separate Medical Council for education and registration for the Irish Free State. With regard to this latter question, an attitude of insularity or intensive nationality would be disastrous, and it was hoped that when this question came to be settled the present relations of the country with the General Medical Council would be altered as little as possible. However, some devolution of functions, especially with respect to penal administration, might be of advantage to both countries. He expressed his regret that up to the present the claims of the medical profession had received little recognition from the Ministry of Local Government. Indeed, when a Local Government Bill was being passed through the Dail it was made the occasion to repeal those clauses of the Local Government Act of 1919 which provided for a compulsory pension for dispensary doctors. The Local Government Bill, for the most part, lacked any medical conception. Even if the Bill's public health provisions had become law, it might happen that they would be departmentally nullified by the offer of salaries so inadequate that they could only ensure the inaction of the medical officials appointed to administer the Act. At the close of his address the President moved the following resolution, which was passed unanimously: "That this meeting expresses the hope that no change will be made in the system of medical registration in the Irish Free State which would interfere with the right already possessed by medical men qualified in Ireland to practise in Great Britain and the Dominions."

The President stated further that the Government had under consideration the question of transferring medical appointments from the local authorities to a central appointments board. Several members expressed disapproval of such a proposal, and the following resolution was unanimously carried: "That this Association re-affirms its opinion that a National Medical Service should be established for the Irish Free State, entrance being by competitive examination, and as recommended by the Irish Public Health Council." A resolution was also passed protesting against the hardship imposed on medical practitioners, who used motor-cars as instruments of their profession, by the present excessive taxation.

INDIAN MEDICAL SERVICE:
ANNUAL DINNER.

Ninety-two officers of the Indian Medical Service sat down to the annual dinner at the Trocadero, London, on June 18th. Colonel J. J. Pratt occupied the chair, and the other members present were as follows:—

Major-Generals: Sir R. H. Charles, G.C.V.O., K.C.S.I.; T. Grainger, C.B.; G. F. A. Harris, C.S.I.; Sir P. Hehir, K.C.I.E., C.B., C.M.G.; H. Hendley, C.S.I.; J. B. Smith, C.B., C.I.E.

Air-Commodore D. Munro, C.B., C.M.G.

Colonels: J. Crimmin, V.C., C.B., C.I.E.; C. M. Goodbody, C.I.E., D.S.O.; T. A. Grainger, C.M.G.; C. R. M. Green; A. J. Macnab, C.B., C.M.G.; H. K. McKay, C.B., C.I.E.; H. Austen Smith, C.I.E.; T. Stodart, C.I.E.; R. G. Turner, C.M.G., D.S.O.; C. N. C. Wimberley, C.M.G.

Lieut.-Colonels: A. Alcock, C.I.E.; J. Anderson, C.I.E.; G. T. Birdwood; A. W. Cook-Young; D. G. Crawford; J. M. Crawford, O.B.E.; H. M. Cruddas, C.M.G., O.B.E.; R. H. Elliot; Sir T. J. Carey Evans, M.C.; F. F. Elwes, C.I.E.; J. Entrican, C.I.E.; A. M. Fleming; J. K. S. Fleming, O.B.E.; A. B. Fry, C.I.E., D.S.O.; H. Greany; J. W. Grant; E. C. Hodgson; E. V. Hugo, C.M.G.; J. G. Hulbert; C. H. James, C.I.E.; J. G. Jordan; H. C. Keates; R. S. Kennedy, D.S.O., M.C.; H. Kirkpatrick; J. C. G. Kunhardt; Clayton Lane; W. B. Lane, C.I.E., C.B.E.; J. Lloyd-Jones; R. McCarrison, C.I.E.; J. McC. A. Macmillan; H. M. H. Melhuish, D.S.O.; A. Miller; R. K. Mitter; T. R. Mulroney; F. O'Kinealy, C.I.E., C.V.O.; S. E. Prall; J. W. F. Rait; Sir J. R. Roberts, C.I.E.; Sir L. Rogers, C.I.E.; R. Steen; A. Street; C. Thomson; W. H. Thornhill; G. Tate; J. H. Tull Walsh; H. J. Walton; D. P. Warliker; C. G. Webster; R. T. Wells; C. E. Williams; H. R. Woolbert; A. C. Younan; T. C. McC. Young.

Majors: H. C. Brown, C.I.E.; H. J. M. Cursetjee, D.S.O.; W. J. Fraser; D. L. Graham, O.B.E.; N. H. Hume; L. C. Irvine; E. O'G. Kirwan; P. S. Mills; W. S. Nealor; A. N. Palit; M. L. Puri; M. J. Quirke; J. G. B. Shand; H. H. Thorburn, C.I.E.

Captains: N. Briggs; J. C. De; G. Kumar; J. G. McCann; V. R. Mirajkar; S. Nag; V. S. R. Pandit; R. Sweet, D.S.O.

VOCAL THERAPY SOCIETY CONCERT.—The members of the King's Services Choirs, with the foundation of which the largest share was taken by Lady Carnarvon, gave their fifteenth concert at the Chelsea Polytechnic Institute on June 14th. The men are sufferers from shell-shock in its various forms, and are beneficially affected by choral singing with the deep-breathing which it involves. Although in time the number of recoveries will result in a diminution of strain on the society's resources, there is still a great deal for it to do, and it is to be hoped that it will receive every support. Those interested in such sufferers should take opportunity of attending some of the concerts.

Correspondence.

"Audi alteram partem."

SOME FUNDAMENTAL FACTORS IN THE SPREAD OF INFECTIOUS DISEASE.

To the Editor of THE LANCET.

SIR,—In his suggestive and interesting paper on this subject, published in THE LANCET of June 7th, Prof. S. F. Dudley makes certain statements which I am surprised to read, and with which I feel compelled to disagree most strongly. The statements I refer to are contained in the following sentences: "The short-range jet of heavy droplets is the usual means by which so-called 'contact' infection is acquired. The best example of the practical application of this principle is seen in the 'bed-isolation' treatment of infectious diseases. Owing to the impossibility of throwing a heavy dose of infective material more than a few feet it is possible to nurse two or three different infectious diseases in the same ward without any appreciable danger from cross-infection, provided the beds are far enough apart." If Prof. Dudley had qualified the statement by saying that it is possible so to nurse certain different infectious diseases, or if he had specified the two or three infectious diseases which could be so nursed, I do not think I should quarrel with the statement. But as it stands it implies (1) that several infectious diseases, no matter what their nature, can be safely nursed simultaneously in the same ward, and (2) that infection is to all intents and purposes always conveyed by heavy droplets with a short range. As regards (1), I venture to say that if Prof. Dudley will read the papers and reports of discussions on the subject of bed-isolation which have appeared in THE LANCET during the last two or three years he will amend his statement at any rate to the extent I have suggested; as regards (2), I say without hesitation that what is stated has not been proved. Prof. Dudley may possibly reply that so-called "contact" infection only is referred to. I confess, however, that I do not understand by "contact" infection infection which is conveyed by droplets through the air, however short the striking distance may be; but if "contact" infection is to include droplet-infection with a short range, then I must demur to the implications that in a bed-isolation ward infection is conveyed by contact only and not through the air, and that droplet infection cannot be effective at comparatively long distances. It may be so in certain cases of certain infectious diseases—e.g., diphtheria and scarlet fever—but for such diseases as measles, small-pox, and chicken-pox, it has not been proved to be so, and, indeed, clinical experience is to the contrary.

I am the more surprised at Prof. Dudley's statements because he has more than once in his paper mentioned the fact that micro-organisms can be conveyed through the air in a ward for 30 or 40 feet. It is true that he explains that infection is rarely effective at those distances, because the droplet which can be carried so far is small, and therefore the dose of infecting virus is small. But is that true? Is it even "the case with many diseases and under ordinary conditions of ventilation," as Prof. Dudley says it is? It may, for all we know, be a question of the size of the infecting organism, concerning which Prof. Dudley says nothing. His experience in the boys' school has been chiefly with the diphtheria bacillus, which is comparatively a large organism. Of the micro-organisms of measles, small-pox, and chicken-pox we know nothing, except that that of measles is stated to be a filter-passer and must therefore be minute. A small droplet might contain many minute organisms, and be as infective as a large one containing many large.

I wish to draw special attention to this question because it is of considerable practical importance, and because I think that Prof. Dudley's statements are likely to be misunderstood by those who are lacking in the necessary administrative experience and are ignorant of the problems of infection with which he is dealing. May I add a few words on one or two points of, at present, hypothetical interest?

In his discussion of the questions of dosage and velocity of infection it seems to me that Prof. Dudley has forgotten one factor which should be introduced into his formula, and that is the faculty the micro-organism has of reproducing itself rapidly. Thus, supposing that the minimal infecting dose is 100, and that the animal attacked can deal with the micro-organisms at the rate of 50 per hour, will the 50 that have not been killed at the end of the hour have multiplied or not? If they have, then there will be an indeterminate number for the attacked animal to deal with, in addition to the 50 surviving from the original invaders, and they must be taken into account in any formula such as Prof. Dudley gives.

To me the most interesting parts of Prof. Dudley's paper are those dealing with host-resistance, epidemic immunity, and the variation of parasitic virulence. I confess to being one of those who find a powerful factor in this variation. Prof. Dudley does not in so many words define what he means by virulence; but towards the end of his paper he suggests that the word may be used to mean power on the part of the micro-organism to injure rather than to kill its host with a small single dose; and, again, he says that "the fact of not being able to detect variation in killing power of a parasite is no argument against some change having occurred in its power of producing disease." He is, I take it, driven to this statement because in diphtheria, the disease on a study of which he seems to have based most of his conclusions, the bacteriologists have not been able to show any but a very transient variation in the virulence of the causal organisms. But I quite agree with his general conclusion. Without postulating the existence of two faculties, an infecting and an injuring, I find it difficult to explain more than one epidemiological fact—for instance, the epidemiological behaviour of scarlet fever over a long period of years. If I remember rightly (for at present circumstances prevent me from referring to books or notes), the subject was discussed at a meeting of the Section of Epidemiology and State Medicine of the last International Medical Congress held in London in 1913. The occasion was a paper by Dr. Major Greenwood on certain epidemiological principles. I must not, however, be supposed to suggest that these two faculties are evident in all infectious diseases, or that the variation in power of resistance of the persons attacked is without effect. Indeed, such evidence as is afforded by the results of the Schick reaction is in favour of the existence of this variation not only at different ages, but in different classes of the community. Perhaps workers in the future may be able to show by a wide application of the Schick, and possibly similar tests, whether the condition of the community in respect of susceptibility has also a secular variation.

I am, Sir, yours faithfully,

E. W. GOODALL.

North-Western Hospital, Hampstead, N.W.,
June 19th, 1924.

"INDUCTION" OR "CAUSE" OF CANCER.

To the Editor of THE LANCET.

SIR,—In his last letter Sir Lenthal Cheatle has treated us to a gay little essay on the proper use of the terms "cause" and "induce." With his use of the latter, I imagine, no logician or literary stylist would quarrel. Being neither, I venture with great humility to suggest to him that, in the two sentences in which it occurs, the noun "cause" is not *le mot juste*, and that if he were to substitute some other word for it he might more lucidly express whatever meaning he intends to convey. I am eagerly awaiting his attempt to find six diseases which can be induced by something that does not cause them.

Dr. H. M. Woodcock has been giving an airing to his delicate outcross ewe lamb—"hæmatophagy." There used to be a story amongst photographers of a great authority who wrote much and learnedly on photographic technique. It was said that when he was about to be married some friend presented him with a camera. He gave up writing and spent the rest of his life trying to take a photograph. I should love to witness the profound emotion with which Dr. Woodcock will behold his first case of cancer.

I am, Sir, yours faithfully,

London, June 20th, 1924. ARCHIBALD LEITCH.

To the Editor of THE LANCET.

SIR,—There are one or two points, by no means novel, that are perhaps worth while bearing in mind during discussion of causation. When, in speaking of any particular observed sequence, we impute or allege a causative action in respect of the antecedent or antecedents, we are not referring to what we have observed, but to a subjective gloss we have placed on what has been observed. We impute to the antecedent and consequent of the sequence the "causal" relation that we think we recognise between our desires and our actions. Moreover, when we single out a particular antecedent and distinguish it from its fellows by calling it "the" cause of what follows, we are not recognising any objective peculiarity; we are merely, as Dr. Mercier used to say, considering as "the" cause that which most interests us, or which we think the most important. There is no harm in all this so long as we recognise what we are doing, but when we speak as if a causal relation could be observed in the same way as we can observe a maiden aunt, why then we are on a fair way to become modern "scholastic realists."

But in medicine (and in surgery!) we do not stop even at this point. We go on to impute causal relations, not merely in respect of particular observed sequences, but in respect of purely fictitious or conceptual sequences. For "diseases" are but universals, or mental constructs, and are not objects of perception. When, therefore, we speak of the cause of cancer we are in the world of *ficta*, as William of Ockham would have said; in the world of fictitious entities, as Bentham did say; in the world of "as if," as Vaihinger does say. Again, there is no harm, and a great deal of advantage, in so speaking: so long, that is, as we recognise what we are doing. But when we declare that because a specific disease, like cancer, can have only one cause, and that a specific one, certain things follow; we are mistaking convenient fictions for statements that can be verified by direct observation. In the world of fictions, or concepts, these single causes of diseases—like the tubercle bacillus in respect of tuberculosis—stand really for defining notions. We define tuberculosis as the disease "caused" by the tubercle bacillus, and think we have dodged the *circulus in definiendo* by our adroit use of the word "caused." We are subconsciously aware that, in the world of happenings, single causes, or specific causes, do not exist objectively as such; and so we try to make an adjustment by talking of predisposing *versus* exciting causes, of induction and not of causation, and the like, without defining our terms or saying what we mean.

An enormous amount of controversial error and of confusion in practice disappears as soon as we recognise the validity of the conceptualism taught by a whole series of thinkers, from Ockham to Vaihinger, or, if we prefer it, the theory of symbolism as set out lately in "The Meaning of Meaning," by Messrs. Ogden and Richards.

I am, Sir, yours faithfully,

F. G. CROOKSHANK.

Wimpole-street, W., June 21st, 1924.

SPINAL ANALGESIA.

To the Editor of THE LANCET.

SIR,—Mr. Holroyd Slater's interesting account of his experiences with spinal analgesia (THE LANCET, June 21st, 1924, p. 1256), in general, agrees with the observations of other workers. Nevertheless, on one or two points, I think Mr. Slater's opinions are open to criticism.

1. Mr. Slater states that he knows of no disadvantages in the procedure, provided that the technique be correct, and that only one of his cases, a nurse, complained of headache. May I remark that the coöperation of the patient is essential, but not always obtainable; that the fall in blood pressure, which Mr. Slater acknowledges to be the rule, is sometimes so considerable as to determine the death of a patient, if already deeply shocked; that neurologists describe a condition which they term "stovaine ataxia"; that some patients suffer from slight backache for several months after the injection; and that most observers confess to severe post-operative headache in at least 5 per cent. of their cases. It is true that the headache may be prevented to some extent by reducing the escape of cerebro-spinal fluid, by keeping the patient still, and by attention to other details, but physicians agree that simple diagnostic lumbar puncture often gives rise to distressing and intractable headache. Together with F. S. Rood (THE LANCET, 1919, i., 14), and others, I have found headache to be very rare after the administration of a general anæsthetic with spinal analgesia. Another objection to the method is the risk (though it should be small) of infection of the meninges, or of injury to the cauda equina by the needle itself, or by intraneural injection of the solution.

2. While quite in agreement with Mr. Slater's views on the value of spinal analgesia in operations on the pelvic organs, perineum, and lower limbs, I have seen severe shock and vomiting during manipulation of the small bowel, mesentery, or stomach, notwithstanding that analgesia extended above the costal margin, and there was complete paresis of the abdominal wall. I have often seen simple hysterectomy performed under spinal analgesia, without undue shock, but in the presence of adhesions separation of the uterus from coils of small bowel always gives rise to some degree of syncope. I attribute this to the difficulty of blocking sensory sympathetic impulses from stomach and bowel unless analgesia extend to the region of the upper dorsal spinal nerves, with attendant grave fall of blood pressure and undesirable paralysis of the intercostal muscles.

3. Surely, Mr. Slater cannot be quite certain of his ground when he states that "the Trendelenburg position cannot be employed with safety." During the past few years all authorities have agreed that, provided ten minutes has elapsed since the injection of the drug, the drug is fixed, and ill-effects from the complete Trendelenburg position are almost unknown. I have notes of 100 consecutive successful cases of this class. It should be remembered that the flow of cerebro-spinal fluid is from the cranium to the sacrum.

With Mr. Slater I, too, have found spinal analgesia of great value in operations involving the lower limbs and the pelvic contents, and I consider the method is specially indicated in the presence of disorders of metabolism, such as diabetes and toxæmias of pregnancy, of nephritis, of heart disease, and for Cæsarean section. Under spinal analgesia, in combination with gas and oxygen, severe procedures, including Wertheim's hysterectomy and excision of the rectum or of a portion of the large bowel, can be undertaken with minimal risk. But to my mind there should be more discrimination in Mr. Slater's advocacy of spinal analgesia.

I am, Sir, yours faithfully,
HENRY FEATHERSTONE.
Birmingham, June 23rd, 1924.

A COUNTY VENEREAL DISEASES SCHEME.

To the Editor of THE LANCET.

SIR,—My attention has been directed to the letter from Dr. W. Herbert Brown, of Glasgow, in your issue of June 7th last, regarding the statistical tables incorporated in my paper on the above subject, which was read at the Imperial Social Hygiene Congress at the British Empire Exhibition. The "headings" of my tables, to which Dr. Brown takes exception as "misleading and in part valueless," are those used in the official returns issued annually from 1918 to 1923 by the Ministry of Health to medical officers of treatment centres, and the "notes" on these returns refer medical officers to Memo. V.21, issued by the Ministry, which contains "suggestions as to the tests which should have been applied before patients who have been under treatment for syphilis or gonorrhœa are regarded and classified as 'discharged after completion of treatment and observation.'"

I am, Sir, yours faithfully,
J. J. BUTTERWORTH,
Medical Officer of Health, Lancashire County Council.
June 18th, 1924.

THE SCHICK TEST.

To the Editor of THE LANCET.

SIR,—We much regret that in our paper on the Schick Test in THE LANCET of May 31st, we have misrepresented the views of Dr. R. A. O'Brien regarding the significance of pseudo-reactions. We attributed to him the suggestion that pseudo-reactors were immune, both of us having, it would appear, misread a sentence in one of the many helpful letters we received from him during our investigation of the test. We must confess, however, that the error is inexcusable, as Dr. O'Brien's published papers make it clear that he can never have held such an opinion. That being so, we can only offer him our sincere apologies.—We are, Sir, yours faithfully,

CLAUDE B. KER,
JOHN MCGARRITY.
Edinburgh, June 18th, 1924.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 14TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely: small-pox, 56; scarlet fever, 1294 (as against 1334 of the previous week); diphtheria, 616; enteric fever, 83; pneumonia, 588 (as against 742 of the previous week); puerperal fever, 44; cerebro-spinal fever, 7 (as against 3 of the previous week); acute poliomyelitis, 5; acute polio-encephalitis, 2; encephalitis lethargica, 171 (as against 179 of the previous week); dysentery, 10; ophthalmia neonatorum, 122. There were no cases of cholera, plague, typhus fever, or continued fever notified during the week. Of the 56 cases of small-pox, 26 were notified from the county of Derby (Derby 5, Chesterfield 17, Chesterfield R.D. 4); 12 from Yorks, North Riding (Middlesbrough); and 6 from Northumberland (Ashington). Of the cases of encephalitis lethargica, 33 were from the County of London (Bethnal Green 1, Deptford 3, Greenwich 2, Hackney 1, Hammersmith 1, Hampstead 1, Islington 3, Kensington 1, Lambeth 2, St. Pancras 5, Southwark 2, Stepney 7, Stoke Newington 2, Wandsworth 1, Woolwich 1); 9 from the county of Durham; 7 from Essex; 8 from Bristol; 18 from the county of Lancaster (Bolton 3, Liverpool 4, Manchester 3); 7 from Middlesex, 7 from the county of Stafford; 6 from Surrey; 10 from Warwick (Birmingham 6); 5 from Yorks, E. Riding (Hull 4); 11 from Yorks, West Riding (Sheffield 6).

Deaths.—In the aggregate of great towns, the deaths from influenza fell further from 46 to 25. The deaths from diphtheria have increased from 8 to 14 in London and from 17 to 27 in the great towns.

THE Minister of Health has appointed Mr. S. F. Perry, M.P., Parliamentary Private Secretary (unpaid).

AT the fiftieth annual meeting of the American Neurological Association, held at Philadelphia on June 5th–7th, Sir James Purves-Stewart was elected an Associate Member.

Medical News.

Society of Apothecaries of London.—At the examinations held recently the following candidates were successful:—

Surgery.—F. James (Guy's), R. D. M. Tims (Cambridge and St. Thomas's).

Medicine.—K. R. Chaudhri (St. Mary's), H. T. Chiswell (Guy's), C. E. Donaldson (Camb. and St. Mary's), A. Kotbi (St. Mary's).

Forensic Medicine.—W. Bentley (Birmingham), H. P. Burns (St. Mary's), K. R. Chaudhri (St. Mary's), A. Kotbi (St. Mary's), J. Wilson (Leeds).

Midwifery.—R. D. Jones (Edin. and Middlesex), W. R. A. Line (Birm.), M. Schwartzman (Odessa and Middlesex), J. Wilson (Leeds).

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: H. T. Chiswell, F. James, A. Kotbi, and W. R. A. Line.

London Hospital Medical College.—The distribution of prizes to the students will be made in the Library of the College, Turner-street, Mile End, by Sir Arthur Keith, on Monday, June 30th, at 3.30 P.M.

Selborne Society: Lectures for Schools.—The Selborne Society, one of whose excellent objects is to bring about public appreciation of the value of science to the community, has for the past ten years systematically sent out lecturers to societies and schools. The current list includes lectures on the Growth of Towns, Wanderings in Zoo Land, Scientific Developments of the World's Food-Supply, Bacteria, and the Ductless Glands. Copies of this list can be obtained from the Assistant Secretary of the Society, at The Hermitage, Hanwell, London, W. 7.

Medico-Psychological Association.—According to the revised agenda of the eighty-third annual meeting of the Association, announced in our issue of last week, Dr. F. R. Martin will read his paper entitled the Reaction of the Blood to the Ingestion of Protein in the Psychoses on July 2nd at 11.30 A.M., not on July 1st as stated. On July 2nd, at 1 P.M., the presidential address will be delivered by Dr. M. J. Nolan. On July 3rd, in addition to the papers already mentioned, Dr. W. M. McAlister will read a paper on the Therapeutic Action of Inoculation with Malaria, and Dr. Marion Alexander will give a communication on Lilliputian Hallucinations, with Notes of a Case. A demonstration of various pathological specimens will be on view.

Departmental Committee on Hospital Services in Scotland.—The Scottish Board of Health has appointed a committee to inquire into and report upon the extent and nature of the inadequacy of the present hospital and ancillary services in Scotland, and to make recommendations for the development and maintenance of those services to meet the needs of the community. The personnel of the committee is as follows:—Lord Mackenzie (chairman), Sir Norman Walker, Dr. D. J. Mackintosh, Mr. T. J. Addly, Mr. John Birnie, Dr. R. C. Buist, Dr. A. K. Chalmers, Mr. John S. Doeg, Mr. Russell Paton, Mr. James Robertson, Mrs. Elizabeth Shirley, and Mr. Joseph Waugh. All communications on the subject of the committee should be addressed to the secretary, Mr. Niven McNicoll, of the Scottish Board of Health, Edinburgh.

Royal Medical Benevolent Fund.—At the last meeting of the Case Committee 26 cases were considered and £351 10*s.* voted to 23 applicants. The following is a summary of the new cases relieved:—

Widow, aged 51, of M.D. Irel., 1875, who practised in London and died in 1923. When applicant's husband died after a long illness the capital was reduced to £47. The practice was sold for £85. Applicant managed to pay up all outstanding bills and put £70 away to meet school fees for her two youngest children. The only money coming in is from the two daughters who are governesses and they allowed their mother 32*s.* 6*d.* per week, but £1 of this ceased on May 31st as the eldest girl's post lapsed, owing to the child being sent to school. Applicant earned £6 10*s.* by cooking. Voted £20 in two instalments.

Daughter, aged 65, of M.R.C.S. Eng. who practised in Chelsea and died in 1885. Applicant is the eighth daughter of 11 children, and up to 1919 supported herself, but owing to the war the firm closed down. Unable to obtain another post owing to age. Now lives with a married sister and helps her in the house, but this sister can ill afford to keep her. A small grant was made and case to be reconsidered.

Widow, aged 60, of L.S.A. who practised in Devon and died in 1905. Applicant asks the Fund to help her to meet her expenses as her total income is only £63 and her rent 10*s.* per week. Owing to ill-health she is quite unable to work to augment her income. Voted £12 in 12 instalments.

Subscriptions may be sent to the hon. treasurer, Sir Charters Symonds, K.B.E., C.E., M.S., at 11, Chandos-street, Cavendish-square, London, W. 1.

Dr. R. A. Lyster, county medical officer of health for Hampshire, has been elected President of the Society of Medical Officers of Health.

Society for the Study of Inebriety.—The annual meeting of this Society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on July 8th, at 4 P.M. A short presidential address on the Aims and Work of the Society for the Study of Inebriety will be delivered by Sir William Willcox, after which a discussion will be opened by Dr. Walter Asten, on the Institutional Treatment of the Alcoholic Inebriate and the Drug Addict.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, June 18th.

Cost of Health Insurance Administration.

Mr. Trevelyan Thomson asked the Minister of Health what was the cost of central administration of National Health Insurance benefits per insured person—i.e., by the Ministry of Health, the Welsh Board of Health, and the Scottish Board of Health, respectively.—Mr. Wheatley replied: The cost of central administration of National Health Insurance in the year 1923 per insured person was as follows: Ministry of Health, 1*s.* 4*d.*; Welsh Board of Health, 1*s.* 9*d.*; Scottish Board of Health, 1*s.* 4*d.*

Housing and Slum Clearance Schemes.

Captain Elliot asked the Minister of Health how many houses were at present under construction by local authorities under the Housing Acts, 1919–23, and slum clearance schemes, respectively; and for how many had schemes been approved under these respective heads on which work had not yet commenced.—Mr. Wheatley replied: The position of local authorities' housing schemes under the Housing Acts of 1919 and 1923 on June 1st was as follows:—

	Housing Acts of—		
	1919.	1923.	Total.
Number of houses under construction	2931	12,752	15,683
Number of houses in approved schemes not yet commenced ..	305	30,900	31,205

As regards slum clearances schemes have been approved which will involve the provision of approximately 5894 houses; tenders have been approved covering 1090 houses.

Captain Elliot further asked the Minister of Health how many houses were at present under construction by private enterprise on schemes under the Housing Act, 1923; and how many houses had been approved in schemes on which work had not yet commenced.—Mr. Wheatley replied: 26,750 houses were under construction on June 1st by private enterprise in connexion with schemes approved under the Housing, &c., Act, 1923, and a further 56,660 had been approved but not commenced at that date.

Sick-Berth Staff at Portland Hospital.

Sir Thomas Bramsdon asked the Parliamentary Secretary to the Admiralty if he would state the number of chief sick-berth petty officers, sick-berth petty officers, and leading and sick-berth attendant ratings now employed at the Royal Naval Hospital, Portland; and if he was aware that dissatisfaction existed with regard to the amount of leave these ratings were able to obtain, on account of the shortage of staff, as compared with other ratings of equal status in the port.—Mr. Ammon replied: The numbers asked for in the first part of the question are 1, 3, 5, and 9 respectively. With regard to the second part of the question, I am not aware that there is any dissatisfaction, but leave is more difficult to arrange at small hospitals than at large ones. The matter was carefully considered as the result of a welfare request in 1922, and it was found that the circumstances did not justify any increase of complement.

Naval Ratings and Tuberculosis.

Sir Bertram Falle asked the Parliamentary Secretary to the Admiralty what percentage of naval ratings invalided during the year 1923 owing to tuberculosis was attributable to service and what percentage was considered to be not attributable to service.—Mr. Ammon replied: The percentages of attributable and non-attributable tuberculosis invalidings during the year in question were 2·1 and 97·9 respectively.

Women as Medical Officers.

Mr. Costello asked the Minister of Health to state what was the total number of medical officers of health employed by local authorities in England and Wales; what was the total number of assistant medical officers of health and school medical officers so employed; how many of these were men and how many women; and in how many cases, during the past 12 months, upon vacancies arising for assistant medical officers in posts held by women, the women had been replaced by men.—Mr. WHEATLEY replied: The total number of medical officers of health employed by local authorities in England and Wales is 1455, all of whom are men. I have not complete information as to the numbers of assistant medical officers of health, but the available records indicate that the number of such officers in England giving whole or part time to maternity and child welfare services is 227, of whom approximately half are women; to tuberculosis services 76, of whom 9 are women; to venereal disease services 42, of whom 12 are women. Many assistant medical officers of health are engaged on more than one service, and therefore these figures are not mutually exclusive; nor do they include certain medical officers appointed wholly for special services. Corresponding figures are not available as to Wales. There are employed in England and Wales 317 school medical officers and 710 assistant school medical officers; of these, 826 are men and 201 are women; 286 school medical officers and 341 assistant school medical officers also carry out public health duties. During the last 12 months I am aware of one vacancy in the post of assistant medical officer of health, and one in the post of assistant school medical officer, previously held by women which have been filled by men.

Sale of Milk in Restaurants.

Mr. LAMB asked the Minister of Health whether he was aware of the practice of exhibiting notices in restaurants and cafés stating that milk was supplied without any guarantee that it was new, pure, or with all its cream; and whether he proposed to secure an amendment of the law to prevent this evasion of the Sale of Food and Drugs Act.—Mr. WHEATLEY replied: Yes, Sir. I am aware of the practice, but I am afraid I cannot undertake to introduce legislation for the amendment of the Sale of Food and Drugs Act at the present time.

Small-pox Hospitals for Tuberculous Patients.

Mr. BLACK asked the Minister of Health the number of small-pox hospitals in Great Britain; how many of these hospitals were unused by patients suffering from the disease in each year from 1914 to 1923; and whether he would consider the desirability and economy of using these hospitals when unoccupied for the treatment of tuberculosis, subject to an arrangement with the county councils for the evacuation of the tuberculous patients at 48 hours' notice in the event of the outbreak of a small-pox epidemic and the premises being required for small-pox patients.—Mr. WHEATLEY replied: There are approximately 340 small-pox hospitals in England and Wales. I have no precise information as to the number of these hospitals which were not used for small-pox cases in each of the past ten years, but about 80 were so used last year. Whilst I should be prepared to consider proposals for the use of small-pox hospitals for the treatment of tuberculosis, I must point out that many of these hospitals are not suitable for the reception of tuberculous patients, and that for the protection of the public health it would not be sufficient merely to require evacuation of the tuberculous patients at 48 hours' notice, unless some alternative accommodation were available for the isolation of the first cases of small-pox.

Spirochætosis Ictero-hæmorrhagica in East Lothian.

Mr. CLARKE asked the Under Secretary to the Scottish Board of Health if, as the result of his inquiries into the cause of the outbreak of spirochætosis, or rat poison, in the East Lothian coalfield, he was yet in a position to state whether or no he would hold a public inquiry so as to allay the anxiety among the people in that district.—Mr. STEWART replied: I am informed that the Mines Department are in communication with the Medical Research Council, with a view to research into the character of the disease. Until further scientific information is available it is considered that a public inquiry would not serve any useful purpose.

THURSDAY, JUNE 19TH.

The Spahlinger Treatment.

Mr. CECIL WILSON asked the Minister of Health whether any progress was being made with the Spahlinger treatment, and how the matter now stood.—Mr. WHEATLEY replied: So far as I am concerned this matter stands as it did on April 16th, when I stated, in reply to a question, that I am anxious to arrange for a scientific investigation of this method of treatment in this country as soon as the materials were made available, and had personally given Mr. Spahlinger assurances to that effect.

Consultative Health Councils.

Mr. MCENTEE asked the Minister of Health why the Consultative Councils authorised by the Ministry of Health Act to advise him upon matters of public health administration relating to medical and allied services, local health administration, and general health questions had not met since 1921; and whether, owing to lack of interest in their work, he was prepared to dissolve such councils and reconstitute them from bodies closely concerned and taking an active interest in health matters.—Mr. WHEATLEY replied: Meetings of these bodies have not been held since the date named because no questions have arisen upon which the Minister of Health has considered it desirable to ask for their advice. The principal suggestion in the latter part of the question was followed in constituting these bodies, and provision is made for periodical variations in their membership.

Certificates in Medical Electricity.

Mrs. WINTRINGHAM asked the Minister of Pensions whether he was aware that the massage advisory committee recently made a unanimous recommendation that the payment of moneys granted for the extra certificates in medical electricity and Swedish remedial exercises be made to all masseuses holding these certificates, and that the reservation limiting such allowances to masseuses engaged in the work requiring the certificates be annulled; whether the Ministry had taken any action on the resolution; and, if not, whether it intended to do so.—Mr. F. O. ROBERTS replied: The reply to the first part of the question is in the affirmative. As regards the latter part, I would draw attention to the fact that the Civil Service Arbitration Board agreed to their award of May 22nd, 1922, that payment of allowances for additional certificates should be made only when the masseurs or masseuses were required to render the forms of treatment in which such certificates indicate that they are proficient, but I am considering the whole question raised in the light of present circumstances.

Deaf Children.

Mr. ROBERT MORRISON asked the President of the Board of Education the number of deaf children of school age in England and Wales, and the number of these who were being taught in special schools or special classes for the deaf.—Mr. TREVELYAN replied: The approximate number of deaf children in England and Wales is 5700, of whom it is estimated that about 1600 are only partially deaf. The recognised accommodation for these children in special schools or classes for the deaf is 4582, and the number of children who were attending these schools on March 31st, 1923, the latest date for which complete figures are available, was 4041.

FRIDAY, JUNE 20TH.

Protection from Lead Poisoning.

Mr. R. DAVIES, Under Secretary to the Home Office, moved the second reading of the Lead Paint (Protection against Poisoning) Bill. He explained that the measure had been framed in accordance with the agreement arrived at by a conference of the International Labour Organisation at Geneva, and the Government would regard it as a breach of honour and a betrayal if the House did not give the Bill a second reading. When old lead paint was rubbed down with sandpaper dust was produced which was specially dangerous indoors where there was not a free flow of air. The painters, masters and men, were unanimously in favour of the Bill. The people engaged in the production of white lead were opposed to the measure, but the voice of the painters who suffered from its use was, he thought, entitled to greater weight. From 1910 to 1923 there came to the notice of the Factory Department in respect of house painters 1500 cases of lead poisoning, of which over 300 were fatal. The trade would be allowed three years to adjust itself to the new conditions. It had been suggested that if a waterproof sandpaper were used wet to rub down paint all would be well, but the Home Office experts were satisfied that this plan did not meet the case. Czecho-Slovakia, Esthonia, and Sweden had formally ratified the Convention, and ratification had been authorised by Austria, Greece, Italy, and Holland. The fundamental principles of the Bill were that after Nov. 19th, 1927, it would not be lawful to use lead paint in painting any part of the interior of a building, and that the employment of women and young persons in painting any part of a building with lead paint should be prohibited.

Mr. HARNEY moved the following amendment: "That this House, whilst of opinion that it is premature to commit Great Britain to the ratification of the International Labour Organisation Convention of Nov. 19th, 1921, and to the prohibition of the use of lead paint in internal painting, would welcome the immediate introduction of a Bill for the better regulation of the use of such paint." He claimed that prohibition would throw thousands out of employment and compel the community to use an inferior article.

Mr. Grenfell suggested that it would be better to leave the whole question open until 1927. If the Bill passed as it was the disease would still increase, not because there would be more disease, but because more pains were being taken to discover it.

Mr. Raynes, who said he was the only operative painter in the House, admitted that there had been a continuing reduction in the number of cases of poisoning by lead paint, but that process was, nevertheless, one of the root causes of industrial disease which it was their duty to abolish. It was practically impossible to make any regulations which would be effective. The hon. Member said that his own right hand (which he raised for the inspection of the House) was for six months each year during ten years useless for writing owing to lead poisoning.

Mr. Bridgeman, a former Home Secretary, supported the amendment. The regulations, he said, should be brought into operation at once. Meantime there might be some invention that would safeguard the health of workers in the use of lead paint, which remained the best mixture for paints.

Dr. Hastings, in supporting the Bill, said that in addition to the deaths among house painters a vast amount of ill-health was caused. The chronic absorption of lead increased their susceptibility to other diseases, but the most serious result was the terrible effect on their children.

Dr. Chapple also supported the Bill.

Mr. Henderson, Home Secretary, said that the Government could not go forward with the regulations unless the second reading of this Bill was agreed to. He understood that the fight was in regard to whether Clause 1 (Prohibition) should be deleted. If the House was prepared to give the Government the second reading of the Bill, he was prepared to do the fighting in Committee. If Clause 1 were deleted he would still proceed with the remainder of the Bill.

After further discussion Mr. Harney's amendment was withdrawn, and the Bill was read a second time.

Housing Construction in Scotland.

Replying to a series of questions by Captain Elliot, Mr. W. Adamson, Secretary for Scotland, said the number of houses under construction in Scotland at May 31st, 1924, by local authorities under the 1919 Act was 2716; under the 1923 Act, 1380; and under slum clearance schemes, 1351. The number of houses for which schemes had been approved under these heads, but on which work had not been commenced was: 1919 Act, 628; 1923 Act, 5732; and slum clearance schemes, 4454. The number of houses under construction in Scotland at May 31st, 1924, by private enterprise under the Housing, &c., Act, 1923, was 2039. The number of houses for which approval of plans had been granted but on which work had not then been commenced was 1474. The number of houses under construction in Scotland at May 31st, 1924, under the Housing, Town Planning, &c. (Scotland) Act, 1919, was 2841; the number for which tenders had been accepted though work had not then been commenced was 482, and the number still to be tendered for was 146. The extension of time given for the erection of houses under the Housing, Town Planning, &c. (Scotland) Act, 1919, expires on August 19th, 1924. It is estimated that a further extension of time will be required for about 2000 houses, but it is not possible at present to fix a definite date by which these will be completed.

Tuesday, June 24th.

Bacteriological Examination of Specimens.

Mr. Black asked the Minister of Health whether, in the interests of the health of the community, he would arrange to give a grant of 50 per cent. on the net cost of bacteriological examinations of specimens forwarded by medical practitioners to the medical officers of local authorities, with an arrangement with the authorities that the cost should be recovered in cases where the patients were able to pay.—Mr. Greenwood (Parliamentary Secretary to the Ministry of Health) replied: Medical practitioners can generally obtain from local authorities reports on bacteriological examinations of specimens forwarded in cases where the diagnosis of venereal disease, tuberculosis, or acute infectious diseases is in question. The expense of such examination is in most cases defrayed by the local authorities. My right hon. friend will be prepared when time admits to consider the arguments for or against an extension of the existing facilities.

Appointments.

Park, W., M.B., Ch.B. Edin., has been appointed an additional Medical Referee under the Workmen's Compensation Act for the County of Orkney.

Certifying Surgeons under the Factory and Workshop Acts: **Hyatt, A. W.**, M.B., B.S. Lond. (Shepton Mallet); **Laing, A. C.**, M.B., Ch.B. Edin. (Levenwick).

Vacancies.

For further information refer to the advertisement columns.

Birmingham City Anti-Tuberculosis Scheme.—Asst. Res. M.O. £450.

Blackburn and East Lancashire Royal Infirmary.—Third H.S. £200.

Blackburn, Calderstones, Whalley.—Asst. M.O. £440 16*s.* 11*d.*

Bloomsbury Dispensary, 12, Bloomsbury-street, W.C.—P. 100 guineas.

Bradford City.—M.O. £600.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. £75.

Coventry and Warwickshire Hospital.—Jun. H.S. £130.

Delhi, Lady Hardinge Medical College.—Lecturer in Physiology. Rs.750 p.m.

Derbyshire Education Committee.—School M.O. £600.

Durham, Richard Murray Hospital, Blackhill.—R.M.O. £400.

Gilbert and Ellice Islands Colony.—Sen. M.O. £650.

Gloucestershire Royal Infirmary, Gloucester.—P.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Gynæcologist.

Hong-Kong University, Faculty of Medicine.—Professor of Obstetrics and Gynæcology. £800.

Hospital for Consumption and Diseases of Chest, Brompton.—R.M.O. and Reg. £500. Also H.P. £50.

Leamington Spa, Warneford, Leamington, &c., General Hospital.—Res. H.P. £150.

Leeds Public Dispensary, North-street.—Jun. R.M.O. £150.

Lincoln, Bracebridge Mental Hospital, nr. Lincoln.—Sen. A.M.O. £350.

Liverpool, Samaritan Hospital for Women.—Hon. Asst. S.

London Homœopathic Hospital, Gt. Ormond-street, Bloomsbury, W.C.—Asst. P.

London Temperance Hospital, Hampstead-road, N.W.—H.P. £120.

Manchester Royal Infirmary.—Second Surg. Reg. £150.

Melbourne University, Victoria, Australia.—Chair of Pathology. £1200.

Middlesex Hospital, W.—R.M.O. £250.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Asst. Cas. O. £100.

Northampton General Hospital.—Sec. Supt. £400.

Royal Chest Hospital, City-road, E.C.—P. to Out-patients.

Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. Reg. and Clin. Asst. 100 guineas.

St. Bartholomew's Hospital.—Asst. P.

St. Bartholomew's Hospital Medical College.—Demonstrator of Physiology.

St. Thomas's Hospital.—Visiting Anæsth.

South London Hospital for Women.—Clinical Asst. (Ophthalmic) to Out-patients.

University College Hospital, Gower-street, W.C.—Asst. to Venereal Dis. Dept. £250.

University of London.—External Examiners.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Each £100. Also Ophth. S.

West London Hospital, Hammersmith-road, W.—Asst. Anæsth.

Wolverhampton and Staffordshire Hospital.—H.S. £150.

Births, Marriages, and Deaths.

BIRTHS.

Brierley.—On June 16th, at Dunera, Richmond-avenue, Bognor, the wife of Lieut.-Colonel C. I. Brierley, I.M.S., of a son.

Driver.—On June 20th, at Victoria-square, Clifton, the wife of H. Lloyd Driver, M.R.C.S. Eng., L.R.C.P. Lond., of a daughter.

Fenton.—On June 23rd, at Devonshire-street, W., the wife of Victor N. Fenton, M.A., M.B., B.Ch. Camb., of a son.

MacMurray.—On June 9th, at Windsor-crescent, Newcastle-on-Tyne, to Lilla, wife of Dr. W. MacMurray, M.D., Ch.B., of a daughter.

Richards.—On June 23rd, at 21, Endsleigh-street, to W. A. Richards, M.B., B.S. Lond., and the Hon. Mrs. Olivier Richards, M.D., M.R.C.P.—a son.

DEATHS.

Connolly.—On June 20th, at Kingsclere, Harrington-road, Brighton, Colonel B. B. Connolly, C.B., late Asst. Director of Medical Services.

Davies.—On June 16th, at Parkwern, Frome, William Henry Davies, L.R.C.P. Lond., M.R.C.S., J.P., in his 80th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, July 2nd.

ANNUAL GENERAL MEETING OF FELLOWS: at 5 P.M.

Thursday, July 3rd.

OBSTETRICS AND GYNÆCOLOGY: at 6 P.M.

Prof. Stroganoff (Leningrad) will open a discussion on his "Treatment of Eclampsia."

Saturday, July 5th.

ELECTRO-THERAPEUTICS: Conjoint Meeting with the Rontgen Society at the Radcliffe Infirmary, Oxford.

Mackenzie-Davidson Memorial Lecture at 3.30 P.M.

Sir Thomas Horder: The Influence of Radiology upon the Criteria of Disease.

Paper: at 5 P.M.

Prof. Sidney Russ: Experimental Studies upon the Lethal Doses of X Rays and Radium for Animal Tumours.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

THURSDAY, July 3rd.—5 P.M., Mr. Richard Lake: Intra-Cranial Complications of Middle-Ear Diseases. (Geoffrey E. Duveen Lectures in Otology.)

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, June 30th.—11 A.M., Surgical Registrar: Surgical Wards. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. Bishop Harman: Eye Dept.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.

WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients. 2 P.M., Dr. Pernet: Skin Dept.

THURSDAY.—11 A.M., Dr. Archer: Chemical Pathology. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—11 A.M., Mr. Simson: Gynæcological Demonstration. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Dr. Burrell: Medical Out-patients.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

WEST END HOSPITAL FOR NERVOUS DISEASES. (At the Royal Society of Medicine.)

THURSDAY, July 3rd.—5 P.M., Dr. Arthur Hurst: The Savill (Memorial) Lecture

HOSPITAL FOR SICK CHILDREN, Gt. Ormond-street, W.C.

THURSDAY, July 3rd.—4 P.M., Mr. Fairbank: Hip Disease.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN.

TUESDAY, July 1st.—5 P.M., Dr. MacLeod: Leprosy.

THURSDAY.—5 P.M., Dr. Barber: Tuberculosis.

THE LANCET: SUBSCRIPTION RATES.

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Notes, Comments, and Abstracts.

TRAINING COLONIES AND VILLAGE SETTLEMENTS IN THE TREATMENT OF PULMONARY TUBERCULOSIS.[*]

BY JOHN B. MCDOUGALL, M.D. GLASG.,
M.R.C.P. EDIN., F.R.F.P.S. GLASG.,
MEDICAL SUPERINTENDENT, WOOLEY SANATORIUM, HEXHAM, NORTHUMBERLAND.

THE subject of my address has at least one thing in its favour. It is neither a purely administrative problem nor yet is it entirely clinical; at the same time, it merits consideration from both branches of the tuberculosis service, if those two distinct branches actually do exist.

The Training Colony of To-Day.

The training colony of to-day has, as its special work, the training of tuberculous patients—usually ex-Service men—in some particular occupation. At the end of a certain time, which varies in different places and with different cases, these men receive (or do not receive) a certificate of health and industry which is, from the purely administrative standpoint, supposed to be the passport to prosperity in life generally. In nine cases out of ten the training colony takes no further interest in the future of the ex-trainee. The statistics given by Bardswell show that it is only very rarely possible for a man on the completion of his training to find a situation in the outside market in the trade in which he has been taught. The man's physical condition may be excellent, but the entire work which the training colony has set out to do, and which to a certain extent it does very well, breaks down at the most crucial point because the training colony scheme per se has made no arrangement for the future of the man. He is expected, as a solitary individual, to go out and fight his own industrial battle. He is expected to find a job, or be dependent on someone, or upon some half-hearted organisation—e.g., a labour exchange—to provide him with work. Alternatively he is supposed to set up a business of his own, often with little or no capital, and against much local prejudice in many cases.

A recent circular from the Ministry of Health has been published, urging that at least six weeks' notice should be given to the tuberculosis officer of the impending discharge of a patient so that reasonable efforts may be made to find employment for those who are discharged from sanatoriums. The intentions are excellent, but I doubt whether any real help to the ex-trainee will result.

The After-Care Committee.

I do not believe that any but a few of our present after-care organisations will assist much in the economic salvation of discharged sanatorium and colony patients. There is far too great a tendency at present to regard after-care committees as charitable organisations, instituted for the purpose of bestowing temporary relief. This is, no doubt, quite a legitimate object, and one which may even justify the existence of after-care committees, but I contend that they are of very limited value in assisting in the real economic solution of the patient's future. Some of us have had the temerity in the past to speak and write on the functions of an after-care committee and to enumerate an imposing array of occupations suitable for the ex-patient.

The plight of an after-care committee, when presented with a case such as the following, may be well imagined. A patient who has just completed a course of instruction as a cabinet-maker in a training colony is referred by the tuberculosis officer to the after-care committee for "suitable employment." This body, composed of laymen and laywomen, is not, as a rule, adept at finding suitable jobs for discharged patients. The members may know of a few windows to be cleaned or of a lawn which is to be mowed, but to face the problem of finding anything like permanent employment for men already skilled in an occupation is a task too often beyond them. And can we wonder at their special difficulty when consulted by an ex-trainee? The man, whilst working at the training colony, was working as one in a unit; after his discharge he *is* the unit himself. It required a large amount of capital expenditure to establish training colonies throughout the country; to expect the ex-trainee to build up a "colony" of his own without capital seems a paradox.

I am far from ridiculing the work of after-care committees. I believe they have a definite function to fulfil. They can, as charitable organisations, bestow charity which is most certainly needed in many cases ; they can organise, according to the abilities of the various members, a disorganised home and can befriend and show kindness in innumerable ways to sufferers themselves. But they cannot solve the real economic factor in the after-care of the tuberculous individual —his permanent employment in industry. Their knowledge of local industrial conditions may be good, often it is not ; their anxiety to help may be overwhelming, but their efforts are in turn overwhelmed by hosts of factors over which they have no control, such as scarcity of employment in a district, prejudice towards the ex-patient on the part of employers and employees, and, most important perhaps of all, the lack of the 100 per cent. vitality in the person whom they are most anxious to help. It may, indeed, be easier for an after-care committee to place an ex-patient who is *not* a trainee, than to find employment for an ex-patient who is a trainee. The time has come for us to realise that what I have termed the "economic salvation" of our patients is something quite beyond the resources of our existing machinery. And yet there is not one amongst us but is certain that if the majority of our middle-stage cases especially were given a real chance of making good whilst working for a reasonable wage at a suitable job in ideal hygienic surroundings, then we should go far towards our goal.

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[*] An abstract of an address delivered to the Yorkshire Tuberculosis Society.

How, then, is the difficulty to be met ? Obviously not by returning the ex-trainee, unassisted in any way, to his previous home and surroundings, even although reinforced to a certain extent in health and with the knowledge of a new occupation. Some have even condemned this procedure as a betrayal, for there is not the slightest doubt that many patients have in the past taken up occupational therapy on the distinct assumption that their after-care was assured. It is now nearly four years since the Ministry of Health, together with the Ministry of Pensions, agreed to institute the scheme of training colonies at different centres throughout the country. At that time I had the honour to be in the service of the West Riding County Council, one of the local authorities concerned, and in response to a request by the tuberculosis subcommittee I made a report, in which I emphasised the fact that the county council ought not to proceed with the training colony unless they were at the same time prepared to formulate measures for the future employment of the discharged trainee. The report was approved and agreed upon ; the training colony was opened, but before many trainees had completed their course of instruction, it became more and more evident that it was essential for the after-care part of the scheme to proceed. It did not, and now, nearly 40 months after the initial warning, I am informed that the policy agreed upon four years ago is to be adopted in a modified form.

Since coming to Northumberland I have had ample opportunity of studying the question from an even more practical standpoint, and feel more certain than ever that the policy of establishing training colonies as such, without sincere and business-like thought being given at the same time to the future of the trainee, is a bad policy. I believe it is a step in the right direction, but I hold that no local authority should be permitted to begin training colonies without some guarantee that their vision goes beyond mere workshops, and the installation of machinery and instructors in the grounds of the sanatorium.

Already training colonies are largely in disrepute, even amongst tuberculosis officers and medical superintendents, who adopt the term "blind-alley" to describe the end-results of occupational therapy as conducted in the majority of training colonies. Many feel that they are following in the wake of other anti-tuberculosis measures, not because they are wrong in principle, but because they are lacking in finality.

Difficulty of Finding Occupation for the Tuberculous.

It is, I suppose, a generally accepted axiom that it is necessary for a large percentage of middle-stage cases of pulmonary tuberculosis to continue to spend the remainder of their lives in ideal hygienic surroundings, and for this it will be necessary, also, for them to change their occupations. A few may be already in the fortunate position that their ordinary occupation can be carried on without loss in money or in health, but this is very much the exception—in the North of England at any rate. In the great majority of instances the patient must be given fresh knowledge. The middle-stage case of tuberculosis in a miner is one where it would be difficult even under the most ideal surroundings to advise a return to underground work. Employment on the surface would at best be only a temporary affair, with the risk of relapse very great. Besides, there is a "brisk demand" for work on the "top." What is one to advise in such a case ? I see no hope whatever unless a new occupation is given to him, taught thoroughly, and selected only after one gets to know the mind of the patient as well as the physical signs in his chest. At the same time it is, in my opinion, essential that before he undertakes the period of training he should be given definitely to understand that the object in training him is to make him a member of a settlement in which he can go on working for a reasonable wage. To enable this guarantee to be given, we must invoke the aid of the settlement, and it is my special plea to ask you to press for settlements of some kind in connexion with the treatment of pulmonary tuberculosis.

The Establishment of a Settlement.

There is a great variety of settlements to choose from, but all have one thing in common—they are extremely difficult to begin. It is, in fact, at this special point that the whole programme for the "complete solution of the problem" as outlined by us doctors breaks down. The link between the training colony and the settlement is by far the most difficult to join up, for the simple reason that the establishment of a settlement is not a medical problem at all. Training colonies were given to us as an adjunct to treatment, and medical superintendents have courageously faced their charge, but settlements were not given to us ; they were the ideal which was to evolve somehow or other from the training colonies. To expect a medical man to be an expert physician, an administrator of ability, and at the same time a business man, fully equipped with a knowledge of industrial markets, is, I submit, asking too much of the majority of our profession. With sanatorium work proper, clinical and administrative, there can be no dispute as to who should be the responsible person, nor should the medical superintendent be freed from taking an active interest in the administrative side of the training colony, more particularly in so far as these problems affect the administration of the sanatorium itself.

The essential thing for the establishment of a settlement is for the training colony, from which the settlers will come, to be eventually in a position to produce material for which there is a certain market. Granted a market for the products of the colony it will be hard enough to make the settlement self-supporting, but if there is only a precarious market or none at all, then the future of any settlement is doomed from the beginning. No amount of financial assistance from Government or any other source can justify the continuation of a scheme which requires large and constantly recurring capital expenditure, maintenance, and wages, and yet which is running at a dead loss. It is for this reason that I emphasise now the very great importance of choosing the most suitable occupations to be taught in the colonies. And as this duty will almost certainly fall on the medical superintendent of the sanatorium, I feel that too much consideration cannot be given to this matter. I go further and say that it is infinitely better for the future of the settlement to have one trade taught in the colony, a trade which can be carried out efficiently and for the products of which there is a constant demand, than to have a multiplicity of instructors teaching handicrafts which, however exquisite the products may appear to the eye, have little or no value as a sound commercial or business proposition. This is, after all, only common-sense business logic, but it is the kind of logic which is being pursued in quite a minority of the training colonies in this country to-day. It is, no doubt, entertaining to see a display of fancy jewellery made by consumptives, but I should not feel convinced that the manufacture of fancy jewellery was a good thing to teach trainees unless I felt certain that the products would one day enable ex-trainees to come into residence as settlers, and make their wages from the profits on their sale. One could mention at least three training colonies which are running at a loss. In two of these four different occupations are being taught. There is one training colony where the loss amounts to as much as 8*s*. per patient per week. Now, if training colonies, with comparatively low overhead charges, cannot be made to run at a profit, how is it going to be possible to inaugurate settlements where the financial outlay in wages alone must be large if the settlement is to be of any real value in the treatment of tuberculosis ?

Perhaps those of us who are engaged more or less constantly in dispensary work, and therefore see little of the colony and settlement aspect of treatment, will ask, "But is it possible to make profits out of any scheme in which tuberculous men are the workers ?" Most decidedly it is. I believe I am right in saying that there is one institution in England where the turnover is no less than £1000 per month in one single branch of its activities, and the profits are sufficient to pay trade-union wages to over 20 men. Another very progressive scheme for the benefit of tuberculous ex-Service men is about to undertake a contract under a local authority for £30,000. At the sanatorium to which I have the honour to be attached we have succeeded in the comparatively short period of eight months in making profits from an industry, for the products of which there is a keen and ready market, sufficient to pay a reasonable wage and maintenance for one year to three men. I see no reason, granted the necessary sum of money is forthcoming for capital expenditure, why the same industry should not be made the medium of support for 30 men.

Importance of the Business Side.

Most certainly there are great openings for special industries in special places, but it is unfair to expect medical men, even if they have started a venture of this kind, to be saddled with the responsibility of developing what I conceive to be a purely business affair. Nor do I wish to convey to you the impression that the medical superintendent should take no interest whatsoever in the settlement. If he has none, then you may be sure his committee will have none. His function should be rather to bring together the members of his committee who are, with him, interested, and whom he knows to be men of recognised business ability. The business side of the concern leading up to the establishment of the settlement ought to be left in the hands of business men. Few sincere business men on the various committees will shirk this responsibility, especially if they see that there is a prospect of helping the cause of public health at the same time.

A Successful Settlement.

One settlement in a country such as ours is, of course, useless. Dr. Varrier-Jones's personal contribution to the diminution in the mortality-rate from consumption is infinitesimal, but if his example were followed by 1000 others the net result would be something very appreciable. I have said previously that there can be a great variety of settlements. The well-known one at Papworth is one very distinguished variety, but it is quite wrong to assume that for a settlement to exist at all it must necessarily be a replica of that very excellent institution. In its very beginnings the Papworth Settlement was a miniature affair; it has developed strictly in accordance with the business capabilities of those responsible for its administration. A settlement where men and their wives and families live together in beautiful and well-appointed modern cottages with every possible convenience is just about the last thing to be considered in the *establishment* of a settlement. There is, however, no harm done in keeping this Utopia well in mind, although the picture has been rather over-emphasised to the absolute neglect of the principle that it is of greater consequence to guarantee the continued existence of such cottages when they are built, and if possible to justify the expenditure of fresh capital in building others. Personally, I am of the opinion that ordinary huts, where men can live as in the training colonies at present in existence, suffice for the preliminary stages of any settlement scheme. It has, I know, been said that isolation from friends and relatives, and the absence of "town life" are insuperable obstacles, but I do not believe that the middle-stage case of tubercle—the man who has been ailing for some years and who has attempted his previous occupation and failed repeatedly—will allow sentiment to interfere with a reasonable chance of keeping alive in good atmospheric conditions and of earning a living wage. Trainees and settlers have a right to know what the future holds out for them, and my experience is that few of them will criticise the doctrine that profits go in wages, and that as soon as the venture justifies its existence *as a commercial proposition*, then cottages of the ideal type will be built, but not till then.

The Papworth scheme has proved itself to be sound; the health statistics are well known, but what is of even greater import from the point of view of the future of all settlements is that it is economically and financially sound for the Government and other bodies to sanction capital expenditure for the erection of additional buildings in which the amount of work turned out can be increased, and in which more men and their families can live. To analyse the success of the Papworth Settlement necessarily implicates the esteemed medical superintendent of the institution, whose very special business qualifications, apart from his outstanding abilities as a clinician, have been instrumental in placing Papworth Settlement in a position of "splendid isolation." I do refuse to believe, however, that we have doubly qualified tuberculosis officers capable of undertaking work of this kind in all the places in the country in which settlements are required.

I am pleading now for the more active coöperation of a new element in the completion of our schemes for the residential treatment of pulmonary tuberculosis. I would go so far as to say that a business committee, having as its function the development of the industrial side of a training colony and settlement scheme, would be a godsend to every sanatorium in this country. And if I am charged with attempting to introduce yet another link in the already complex chain, I will defend myself by urging that the after-care of the sanatorium patient is a problem of the first magnitude.

COLONIAL HEALTH REPORTS.

UNFEDERATED MALAY STATES.

Johore.—A census taken in 1921 shows that the population was 282,234. The number of births registered in 1922 was 10,223, and of deaths 8248. The territory has been again free from both plague and cholera. There were 23 cases of cerebro-spinal meningitis, of which 20 were fatal. 16 cases of chicken-pox and 32 of measles were reported; there were no deaths from either disease. Influenza was more prevalent than in 1921, 72 deaths being reported. There were 87 cases of small-pox with 6 deaths. Six cases of typhoid fever were reported, of which 4 were fatal. Excellent results have been obtained in the treatment of ankylostomiasis. In 1922 the cases were 1276 and the deaths only 46, compared with 1409 and 80 respectively in 1921. The number of deaths from beri-beri fell from 338 to 318, but the cases treated in the Government hospitals rose from 246 to 396, and it is feared that the improvement in the incidence of this disease, which was very marked during the period of food control, is being gradually lost. Only 7 cases of blackwater fever with one death occurred during the year. The cases of dysentery and diarrhœa numbered 728 with 141 deaths. Great improvement is shown in the figures for malarial fever. Not only have the total number of deaths been less (3821 in 1922 against 4719 in 1921), but the percentage of deaths to total cases treated in the hospitals has fallen from 8·81 per cent. in 1921 to 5·33 per cent. in 1922. Phthisis is unfortunately rapidly increasing both in its incidence and mortality. In the Government hospitals there were 408 cases and 192 deaths, against 247 cases and 140 deaths in 1921. The number of lepers in the Johore Leper Asylum at the end of 1922 was 45. Experiments were made on a few cases with the "Moorgol" treatment, but the results were, on the whole, disappointing.

Kelantan.—Dr. H. W. Furnivall acted as residency surgeon till Oct. 21st, when he was relieved by Dr. J. R. McVail. Dr. Lim Shin Thwin assisted in Kota Bharu when required, and Dr. W. J. Geale assisted in Ula Kelantan. Cholera broke out in April, 1922. There were 27 cases with 14 deaths, and 135 cases of choleraic diarrhœa with 75 deaths. There were 100 cases of influenza with 6 deaths. There were 2 cases of small-pox and 14 of chicken-pox; 6 deaths from pneumonia occurred in the State hospital and 16 in estate hospitals. The population of Kelantan continues to be highly infected with whip-worm, ankylostomiasis, and ascaris lumbricoides. There were 6 lepers in the leper camp at Kota Bharu on Jan. 1st, 1922, and 8 admissions during the year; 3 were discharged after treatment apparently cured.

Trengannu.—The health of the State in 1922 was fairly good; there is a notable absence of malaria except in up-country areas. The chief maladies were dysentery, venereal, worms, influenza, ulcers, yaws, and skin diseases of various kinds. Infant mortality was heavy among untreated cases and continues so in the Kampongs. Mr. N. Kington (a Chinese practitioner) was in charge of the medical department until October, when he was succeeded by Dr. A. B. Jesser Coope, seconded from the Straits Settlements. Mr. Kington did much good work under difficult conditions. Dr. Coope is the first European medical officer to enter Trengannu service. Provision has been made for the erection of a hospital and a suitable site has been secured. Medicines were supplied free of charge at the Government dispensary throughout the year; this privilege is liable to abuse, and it is doubtful whether medicines obtained without cost are properly valued.

Kedah.—The population is estimated at 340,000. The birth-rate in 1922 was 30·30 and the death-rate 25·40 per mille. There was a marked improvement in infantile mortality, the rate being 165·36 as against 194·98 in the previous year. The number of deaths in the State was 8656, of which 4378 were attributed to fever, but the returns are not very reliable. The only accurate figures are those from the hospitals. Eight Government hospitals were maintained and 13,018 patients treated therein. The principal diseases were malaria, venereal diseases, ankylostomiasis, dysentery, pulmonary tuberculosis, and pneumonia. In addition to the out-door departments at the hospitals there are 7 Government dispensaries in the State; they did good work, the number of prescriptions dispensed being 25,025. Kedah was free from any epidemic or infectious disease, but sporadic cases of small-pox occurred throughout the year; there was a total of 15 cases with 4 deaths; 22,566 people were vaccinated. Nearly 3000 persons, almost all of whom were Malays, were injected with neosalvarsan for paru (yaws); the immediate results were wonderfully good. There was a considerable increase in the number of deaths due to diseases connected with childbirth. The prejudice against competent medical assistance in such cases remains very strong, but it is hoped that the proper training of Malay midwives may lead to better results. There remained 50 lunatics from Kedah under treatment at Tanjong Rambutan at the beginning of the year; 40 more were sent, 11 were discharged, 7 died, and 5 absconded. 31 lepers were being maintained by the State at Pulau Jerejak and 6 at Pulau Pangkor Laut, The accommodation at these places is limited, and 11 patients were awaiting vacancies at the end of the year. A separate health department was started at the beginning of 1922, Dr. A. G. H. Smart being appointed health officer.

Perlis.—There were 613 births registered in 1922, these comprising 518 Malays, 29 Siamese, 62 Chinese, 3 Tamils, and 1 Bengali. 606 deaths were registered—viz., Malays 479, Siamese 25, Chinese 85, Tamils 15, Bengali 1, and 1 of other nationality. The number of in-patients treated in Kangar Hospital during the year was 519, including 25 females. The number of out-patients was 9269 as against 7425. Malay admissions increased from 48 to 67. The prevalent ailments are venereal disease, malaria, and ulcers. Diets were provided by departmental catering, ordinary diets at 19 cents, and milk diets at 28 cents. Three lepers were admitted during the year and transferred to Pulau Jerejak, making a total of 5 maintained there by Perlis. One case of infectious disease (small-pox) occurred in Kangar; precautions were immediately taken and there were no further cases. An isolated case of chicken-pox was treated in the hospital, and several mild cases of measles were reported from the Kampongs. The total number of vaccinations performed during the year was 1815, of which 1613 were successful.

WOMEN'S HOLIDAY FUND.

To the Editor of THE LANCET.

SIR,—May we ask you again this year to allow us to appeal on behalf of the Women's Holiday Fund? A holiday to many of the women living in the poorer districts of London is an impossibility, for it cannot be paid for out of the weekly money earned. Among the 200 applications already received this year, 20 applicants have never had a holiday throughout their lives, 18 have not had one for over ten years, and 28 not for more than four years. The approximate cost of a fortnight's holiday is £3 or £3 10*s.* for a mother with a baby, towards which the women contribute on an average less than one-third.

Surely, it is not an impossible thing to hope that among the many thousands who enjoy a holiday every year there may be at least 1000 who would like to give the sum of £2 to our Fund, and thereby help to send back refreshed and cheered, after a fortnight at the seaside, one of the many wives and mothers on whom the happiness and well-being of our homes largely depends.

Donations should be sent to the Secretary, Women's Holiday Fund, 76, Denison House, 296, Vauxhall Bridge-road, S.W. 1.—We are, Sir, yours faithfully,

A. F. LONDON.
MANUEL J. BIDWELL, Bishop of Miletopolis.
J. SCOTT LIDGETT.
HELEN A. POWNALL,
Chairman of the Executive Committee.

"THE SCOURS."

To the Editor of THE LANCET.

SIR,—An extremely interesting experiment has been carried out by me at my farm at Southwood, Westerham Hill, Kent, with a view to finding out the cause of enormous losses amongst pig-breeders during the months of March, April, and May from so-called "scours." By "scours" the ordinary farmer means that his pigs have a peculiar kind of diarrhœa, usually yellowish or white in colour, sometimes a little mucus, hardly any, if any, blood. The disease is acute, and death takes place within 48 hours. The post-mortem results show nothing more than a general inflammatory condition of the stomach and the whole of the mucous membrane lining the intestine. The mucous membrane is œdematous and very red. There is no ulceration on macroscopic examination. The pigs become rapidly weak and from being a perfectly normal pig 48 hours previously, it now becomes tottering and so weak that it is unable to take food, even to suckle its mother. This condition generally arises in pigs of about 3 to 4 weeks old.

Cultures were taken by me from the stools of pigs suffering from this symptom and from those not affected, and no difference could be found in any of the organisms. It has often been stated that this condition is due to lack of mineral salts, chiefly calcium; by others it has been stated to be due to lack of iron. Several of the pens suffering from so-called "scours" were treated by the addition of powdered chalk and powdered calcium with phosphates and hæmoglobin, yet the results were disastrous. I was so convinced that the condition was one due to deficiency of vitamin A that I added quantities of dried yeast to two lots, and to another two lots I added a sufficient quantity of a proved food rich in vitamin A, and within 24 hours those to which had been added food containing vitamin A were almost well, whereas those to which vitamin A had not been added to their food were rapidly dying. To these was given a mixture containing cod-liver oil which had been tested by me for its vitamin-A content and they immediately recovered, even those that had been at death's door.

It is interesting to note the months of the year when this disease is prevalent—namely, March, April, and May. One would have expected this condition to have occurred during the hot summer months or during the winter months when the weather is bad and the piglets are exposed to adverse weather conditions. The reason is now easily explained: that those piglets which are born during the summer months are from sows that were grass-fed during the spring, and thus the milk of the dam is rich in its vitamin-A content. I am well aware of the value of mineral salts to growing animals, yet my experiments definitely prove that mineral salts are of but little value in the absence of vitamin A. I was surprised to find, contrary to most experimentalists, that the cabbage family, the *Cruciferæ*, are deficient in vitamin A. Now this opens up a most important point to us as medical men—that milk from cattle which are fed on concentrated cake foods are deficient in vitamin A, as I carried out an experiment in feeding pigs on the usual diet given to dairy cows, and their offspring suffered from diarrhœa. Immediately the piglets were given cod-liver oil the diarrhœa stopped. Also several of these pigs on post-mortem examination were found to have small pneumonic areas of consolidation, undoubtedly due to lowered resistance owing to the deficiency diet.

I am, Sir, yours faithfully,
Knightsbridge, S.W., June 23rd, 1924. M. J. ROWLANDS.

A MATTRESS FOR BEDRIDDEN CASES.

THE inadequacy of the ordinary hospital mattress in bedridden or incontinent patients is familiar to anyone who has been burdened with the care of patients of this type. Even with the most conscientious nursing care it is almost impossible to keep these patients clean and comfortable. Working in conjunction with Miss Anna Scanlan, R.N., of the Bellevue Training School, Dr. J. F. Montague[1] has devised a mattress which has been used with much satisfaction in several large hospitals and private homes in New York City. In size and general appearance the mattress devised resembles an ordinary single-bed mattress, and may be used on any bed or any spring. It differs, however, from the ordinary mattress in possessing a recess built into the centre of the mattress to accommodate an excretory receptacle (Fig. 1). This recess is filled by such receptacle and a mattress section or by two mattress sections as required; with the two sections in place the mattress may be used as an ordinary one (Fig. 2). When the receptacle is in use the recess, and the mattress for about one foot around, is covered with rubber cloth in case of accidental spilling of excreta, though this, with ordinary care, seldom occurs. The patient is made comfortable by lying on a rubber ring, cushion, or pneumatic horseshoe which is placed on the bed-pan or douche-pan. The latter has appeared preferable in many instances. To change the pan the patient is half turned and the outer section withdrawn, while the soiled pan is replaced by a clean one, and is then put back.

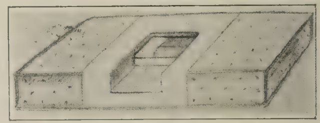

FIG. 1.—The mattress with bed-pan in place.

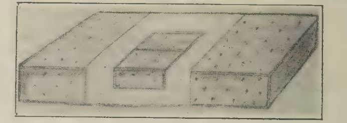

FIG. 2.—The mattress with the gap filled up.
From "Surgery, Gynecology, and Obstetrics."

In cases not incontinent this type of mattress, because of the depressed position of the pan, allows natural excretionary function without disturbance to the patient. This may be of prime importance in cases of pneumonia, apoplexy, or after recent abdominal section. The author suggests that the mattress can be utilised with advantage in procuring specimens in difficult cases, for giving enemas, for catheterisations, for giving high colonic irrigations, in obstetrical cases, and in those psychopathic cases that need continual restraint. It may also be of value where plaster casts are worn over a period of time.

The device seems to us to be of considerable merit. One point which the author has omitted to discuss is the arrangement of the sheet. Presumably separate sheets for the upper and lower part of the bed would be required, with a draw sheet to cover the central area.

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[1] Surgery, Gynecology, and Obstetrics, vol. xxxviii., No. 1.

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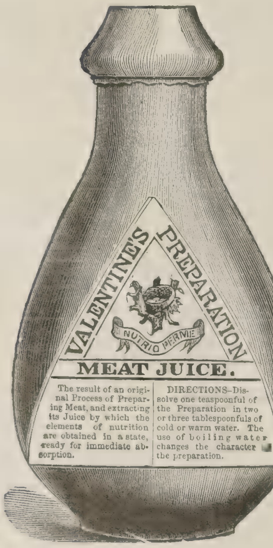

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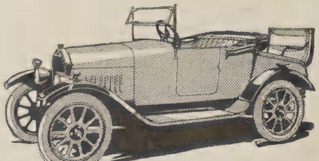

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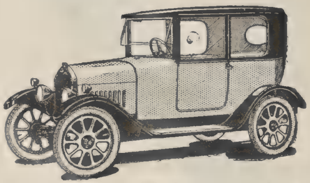

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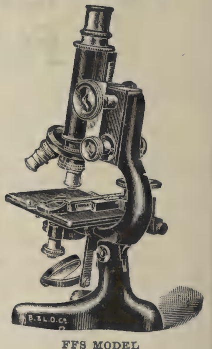

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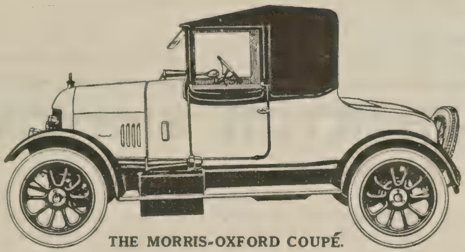

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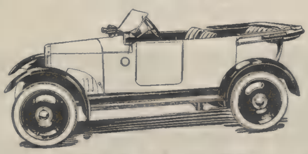

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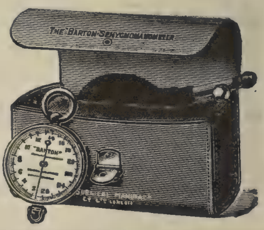

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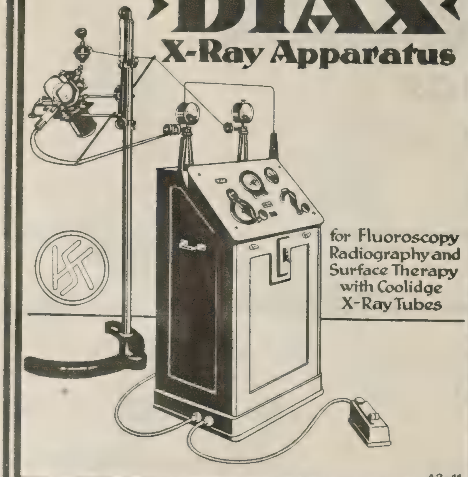

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A reliable and palatable preparation of the Thyroid Gland.

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Indicated in Myxœdema and in congenital and surgical Athyroidism, in Psoriasis and Chronic Eczema.

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Each fluid drachm represents the active hormones of 3 grains of the whole Fresh Pituitary Gland, equivalent to ½ grain of the Dried substance.

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Intestinal Disinfection

No. 12.

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The substances which may sensitise are very varied (e.g., animal dandruff and hairs, plant pollens and hairs, animal and vegetable proteins of foods, bacteria and their products), and the reaction may take the form of epileptic attacks, fainting fits, skin eruptions, asthma, &c.

In many instances the sensitisation is produced by bacteria or their products in the bowel, and by the exhibition of an efficient intestinal disinfectant the subject is cured. This has been found to occur in many cases of asthma, eczema and other skin diseases.

The best of all intestinal disinfectants is KEROL, which acts as a specific cure in many of these cases.

For intestinal disinfection, use KEROL CAPSULES (keratin-coated); they contain 3 minims of Kerol. One to three capsules may be given three or four times a day after meals.

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The standard of quality for Hydrogen Peroxide.

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Strength 25% higher than B.P. standard.
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GOLD MEDAL, International Congress of Medicine, 1913.

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GOLD MEDAL, INTERNATIONAL CONGRESS OF MEDICINE, LONDON, 1913.

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As a nerve tonic and brain stimulant it is unequalled, and its invigorating properties will be found invaluable in many diseases where there is great depression and exhaustion. In paraplegia, hemiplegia, and partial paralysis, it is particularly indicated, and may be suitably and satisfactorily employed wherever a powerful nerve stimulant and restorative are required.

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"I have tried your Mist. Damianæ Co. considerably in the dyspepsia of commencing phthisis, and can very strongly recommend its use in those cases. **It soothes the stomach wonderfully, and enables the patient to take more food whilst acting as a powerful stimulant in relieving exhaustion.**"—Yours faithfully, W. H. B——, B.A. (Cantab.), M.R.C.S., L.S.A.

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"I have frequently prescribed your Mist. Damianæ Co. and proved it efficient in treating Neurasthenia."

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M.198.

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They contain the hormones of the reproductive glands and of the glands of internal secretion.

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Fandorine is an association of the substances of the two essential types of the genital glands, to which are added the active principles of anemone, and constitutes a specific for all diseases peculiar to women. It *regulates the functions*, arrests hæmorrhage and suppresses painful symptoms.

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"STABILARSAN" BRAND.

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British Patent No. 177283

BOOTS

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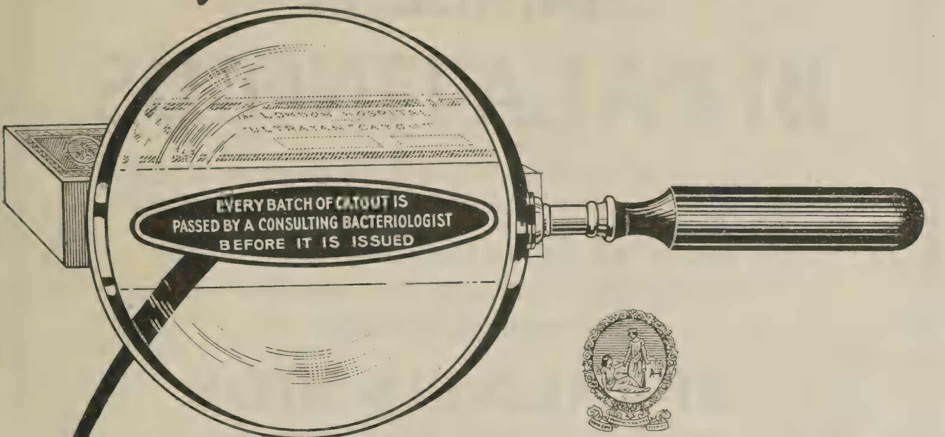
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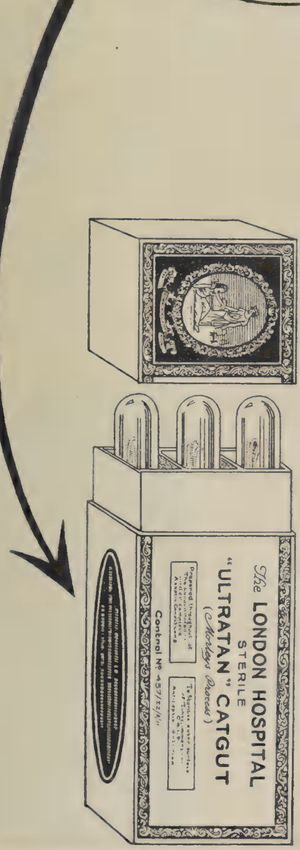

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It is claimed for London Hospital Catgut:

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in cases of acute anæmia and chlorosis is increasing rapidly—and rightly so, for the principle is one which by its simplicity and efficacy recommends itself to all members of the medical profession.

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are gelatin capsules divided into two compartments, one containing the alkaline carbonate, and the other the sulphate of iron. On reaching the stomach, reaction takes place and NASCENT ferrous carbonate is formed which is AT ONCE dissolved in the acid gastric juice. Hence the very rapid progress made by the patient where Bi-Palatinoids are prescribed by the practitioner.

⁂

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No. 500 gr. i.
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Ferrous Carb. i. and ij.
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which present animal substances of the highest possible quality and activity.

As the formulæ indicate, these products are suitable for use in a wide range of conditions calling for organo-therapy.

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No. 1 *(Male)*

Thymus Gland,	*gr.* 2 (0·13 *gm.)*
Thyroid Gland,	*gr.* 1/5 (0·013 *gm.)*
Pituitary Gland (Anterior Lobe),	*gr.* 1/2 (0·032 *gm.)*
Suprarenal Gland,	*gr.* 1/4 (0·016 *gm.)*
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Cerebrin,	*gr.* 1/2 (0·032 *gm.)*

In bottles of 100, at 4/7 per bottle

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Pituitary Gland (Anterior Lobe),	*gr.* 1/2 (0·032 *gm.)*
Suprarenal Gland,	*gr.* 1/4 (0·016 *gm.)*
'Varium,'	*gr.* 1/2 (0·032 *gm.)*
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DATE: 681—668 B.C.

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This preparation combines in an unusual degree the qualities of assimilability and high-nutritive content. It is superior to "Beef tea," as the meat itself is made soluble by the action of digestive enzymes.

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(Benger) A pleasant change to the Beef Jelly is provided by Benger's Peptonised Chicken Jelly, made on the same principle and being similarly easy of preparation.

NOTE :—Benger's Beef Jelly and Chicken Jelly are entirely free from preservatives.

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M. 7

KINECTINE

KINECTINE

The Treatment of

HAY-FEVER

KINECTINE

KINECTINE

Literature and Samples on request.

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tablets or pulverettes——

Medical practitioners have occasionally called attention to the fact that, in certain cases—e.g., where there is a deficiency of pancreatic enzyme—keratin-coated tablets or pulverettes are liable to pass undissolved throughout the intestinal tract.

For this reason, and at the suggestion of the correspondents referred to, sugar-coated Dimol pulverettes (B) have been prepared and are found to give greater satisfaction. They are partially dissolved in their passage through the stomach, but the action of Dimol is not impaired thereby, and is free to exert its powerful influence immediately after its passage through the pylorus ; whereas the keratin-coated pulverette (A), under the most favourable conditions, cannot be expected to get to work so quickly, and may, in fact, as above explained, pass undissolved.

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It is a satisfactory and convenient product for the preparation of special foods, free from carbohydrates, and containing a minimum of fat; or definite proportions of these may be added as tolerance increases with the progress of the treatment. The 'Allenburys' Diabetic Flour is compact, convenient to use, and keeps well. From it may be prepared a variety of palatable and highly nutritious foods of special composition. Recipes and directions for use are enclosed with each packet.

COMPOSITION:

	Per cent.
TOTAL PROTEINS	87·0
FAT	0·7
SODIUM BICARBONATE	1·6
ACID POTASSIUM TARTRATE	1·6
MOISTURE	9·1

Calorific Value—30·3 calories per 100 grammes
or 1,376 calories per lb.

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"I have tested the sample of 'Allenburys' Diabetic Flour which you recently sent me and find it makes admirable bread, etc.; it is both more easily digested and more palatable than any similar preparation I have come across."

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See also pp. 12. & 21.

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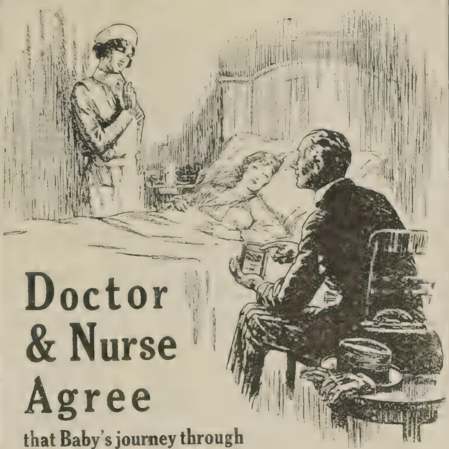

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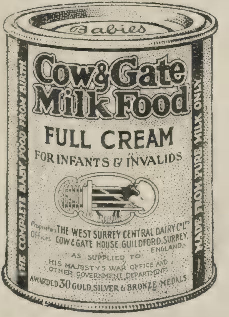
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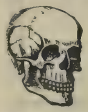

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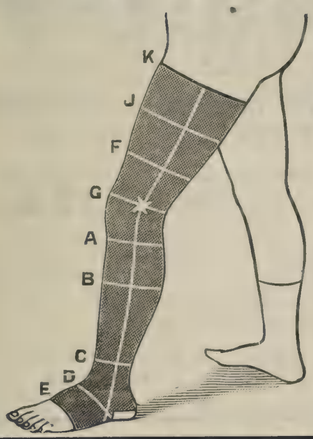

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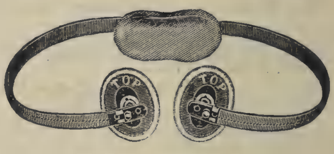

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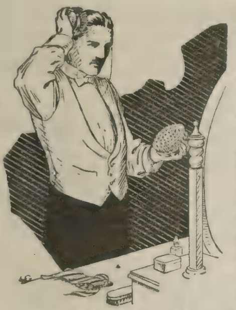

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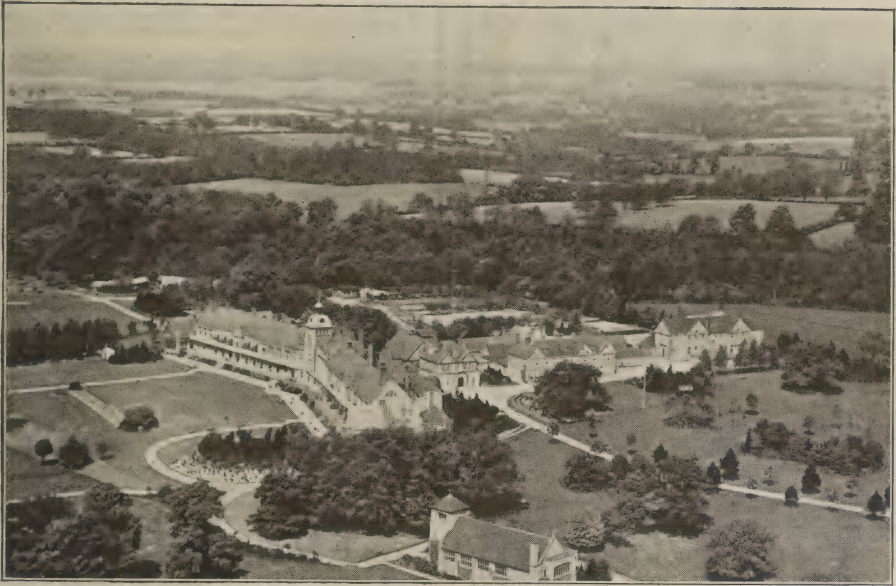

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The Committee of the above Hospital have vacant accommodation for the reception of PRIVATE PATIENTS of both sexes, in separate Wards, which are healthily situated with extensive views of the Exe and surrounding Devon scenery. Charges £3 3s. per week, including all necessaries except clothing. Special arrangements can be made.—Apply to "The Medical Superintendent." Telegraphic Address: "Deepway," Exeter. Telephone "280 Exeter."

Elderly Gentleman, threatened with blindness, seeks comfortable HOME in Doctor's house or refined Institute where male attendant is kept. Separate bedroom. Terms strictly moderate.—Address, No. 559, THE LANCET Office, 423, Strand, W.C. 2.

St. Michael's, Broadstairs.—A charming Country HOUSE, beautifulfgarden, South aspect. close to sea, where Invalids are received for Rest, Care, or Convalescence. Accommodation for Spinal Cases. Excellent cooking, Moderate charges.—Apply, Miss Gertrude Fletcher, R.R.C.

Convalescent and Rest Home, 1, Eton-road, Frinton-on-Sea. (No infectious or mental patients taken.) Staples' beds, private bathing hut Telephone: Frinton 199. Misses Hodgson and Jefferys, Registered Nurses.

Trained Nurse would like the care of Delicate CHILD in her private house.—Apply, The Retreat, Teignmouth, S. Devon.

St. Thomas's Hospital.—Vacancy.— The appointment of a VISITING ANÆSTHETIST will be made by election.

Applications, with testimonials, should be forwarded to G. Q. ROBERTS, Secretary, not later than the 28th July, 1924.

London Temperance Hospital, Hamp-stead-road, N.W. 1.—Applications are invited for the post of HOUSE PHYSICIAN, which will be vacant on the 14th July next. Honorarium £120 per annum, with residence, board, &c. The appointment is for a period of six months, renewable.

Applications should reach the Secretary on or before 4th July.

University College Hospital, Gower-street, W.C.1.—Applications are invited for the post of ASSISTANT to the Venereal Disease Department at a salary of £250 per annum.

The duties require attendance at four clinics per week (Monday, Wednesday, and Friday at 5.30 P.M., and Saturday at 1.30 P.M.).

Applications, accompanied by three testimonials, must reach the Secretary by noon on Monday, June 30th, 1924, and London candidates should attend personally on that date at 5.15 P.M.

Registrar.—The Committee of the ORTHOPÆDIC HOSPITAL invite applications for a vacancy of REGISTRAR and CLINICAL ASSISTANT. Honorarium 100 guineas. Appointment for twelve months, renewable for a further twelve months on the recommendation of the Medical Board. Candidates must be doubly qualified. Applications, with copies of three recent testimonials, should reach the Secretary, Royal National Orthopædic Hospital, 234, Great Portland-street, W. 1, not later than July 11th. Particulars of duties will be forwarded on application.

Victoria Hospital for Children, Tite-street, Chelsea, S.W. 3.—The Committee of Management invite applications for the post of OPHTHALMIC SURGEON, which falls vacant the 1st August.

Candidates must be Fellows of the Royal College of Surgeons of England (not practising Midwifery or Pharmacy). Candidates are expected to call on Members of the Medical Staff.

Applications, with copies of testimonials, to be sent to the Secretary, at the Hospital, on or before Saturday, 12th July, 1924. By order.

D. ST. JOHN BAMFORD, Secretary.

Victoria Hospital for Children, Tite-street, Chelsea, S.W. 3. (130 Beds.)—The Committee of Management invite applications for the posts of HOUSE PHYSICIAN and HOUSE SURGEON (both vacant 1st August). The appointments are for six months. Salaries at the rate of £100 per annum with board, lodging, and washing. Candidates must hold Medical and Surgical qualifications and be registered under the Medical Act.

Applications, with copies of three recent testimonials, should be sent to the Secretary not later than first post Tuesday, 8th July, 1924. By order.

D. ST. JOHN BAMFORD, Secretary.

St. Bartholomew's Hospital.

OFFICE OF ASSISTANT PHYSICIAN.

Notice is hereby given that a meeting of the Election Committee will be held on Monday, the 28th July, 1924, at 4 o'clock in the afternoon, to elect an ASSISTANT PHYSICIAN to this Hospital.

Candidates, who must be Fellows or Members of the Royal College of Physicians of London, are required to Lodge thirty-six copies of their applications and testimonials with the undersigned on or before Saturday, the 12th July, 1924.

THOMAS HAYES, Clerk to the Governors.

19th June, 1924.

The Mildmay Mission Hospital, Austin-street, Bethnal Green, London, E. 2 (near Shoreditch Church).—Applications are invited for the post of ASSISTANT CASUALTY OFFICER. The appointment is part-time and non-resident, and for six months. Salary £100 per annum.

Candidates must be duly registered under the Medical Acts, and the Mildmay Council are anxious that they should be fully in sympathy with the religious work of the Hospital.

Applications, with copies of recent testimonials, should be sent to the Medical Superintendent at once.

June 19th, 1924.

Central London Throat, Nose and EAR HOSPITAL, Gray's Inn-road, W.C. 1.

RESIDENT HOUSE SURGEON (Male).

There will be a vacancy for a Second Resident House Surgeon to enter on duty about the middle of August. Remuneration at the rate of £75 per annum.

The appointment offers good opportunity of acquiring extended knowledge of the diseases treated.

Applications, with copies of not more than three testimonials, should be sent to the undersigned not later than July 5th.

RICHARD KERSHAW, Secretary.

West London Hospital, Hammer-smith-road, W. 6. (160 Beds.)—Applications are invited for the post of ASSISTANT ANÆSTHETIST. Candidates are required to be registered under the Medical Act; to send applications with copies of testimonials so as to reach me by Wednesday, 16th July; to attend the Medical Council on Friday, 18th July, at 4.30 P.M.; and prior to that date to call upon and send copies of their applications and testimonials to the members thereof; to abstain from canvassing, but nevertheless to send copies of their application and testimonials to the members of the Board of Management, who will elect on Tuesday, 22nd July, at 5 P.M., when candidates must be in attendance.

H. A. MADGE, Secretary.

Bloomsbury Dispensary.—The office of PHYSICIAN to this Charity having become vacant, egntlemen wishing to become candidates for the appointment are requested to send their applications and testimonials to the Secretary of the Dispensary not later than Friday, the 4th July.

An honorarium of 100 guineas is usually voted annually to the Physician.

Candidates must be either Fellows or Members of the Royal College of Physicians of London and not practising Pharmacy or Midwifery.

Canvassing is not permitted.

Further particulars may be obtained of the Secretary, Bloomsbury Dispensary, 12, Bloomsbury-street, W.C. 1.

University of London.

NOTICE IS HEREBY GIVEN that the Senate will proceed to elect EXTERNAL EXAMINERS for the calendar year 1925 or the Examinations above Matriculation as follows. Except when otherwise stated, Examiners will act in all Examinations in which the subject is included. Where Examiners are to be appointed for (*a*) Intermediate Examinations only, and (*b*) Final and Higher Examinations only, the fact is indicated after the name of the subject below; in these cases the same Examiner cannot hold both appointments.

For the Calendar Year 1925.

For the First Examination for Medical Degrees.

BIOLOGY. PHYSICS.

For the Second Examination for Medical Degrees.

CHEMISTRY (two). PHYSIOLOGY.

Higher Examinations for Medical Degrees.

MEDICINE (two). OBSTETRIC MEDICINE.
MENTAL DISEASES. STATE MEDICINE.
NEUROLOGY. SURGERY.
TROPICAL MEDICINE.

N.B.—Attention is drawn to the provision of Statute 124, whereby the Senate is required, if practicable, to appoint at least one Examiner who is not a Teacher of the University.

Application form (or forms if more than one Examinership is applied for) and particulars of the remuneration and duties can be obtained from the External Registrar.

Candidates must send in their names to the External Registrar, GEO. F. GOODCHILD, M.A., B.Sc., with any attestation of their qualifications they may think desirable, on or before Monday, 7th July, 1924. (Envelopes should be marked " Examinership.")

The Senate desire that no application of any kind be made to individual members.

If testimonials are submitted, one copy only of each is required. In no case should original testimonials be submitted. If more than one Examinership is applied for, a separate and complete application must be forwarded in respect of each Examinership. The appointments will be made by the Senato in November. Applicants who desire that the result should be communicated to them are requested to enclose a stamped and addressed envelope with their applications.

E. C. PERRY, Principal Officer.
University of London, South Kensington, S.W. 7,
June, 1924.

South London Hospital for Women,

South Side, Clapham Common, S.W. 4.

The Board of Management invite applications from qualified Medical Women for the appointment of CLINICAL ASSISTANT (Ophthalmic Department) to attend at the Out-patient Department, 86–90, Newington Causeway, S.E., on Monday and Friday afternoons. Refractions taught. Applications, with testimonials, to be forwarded to the Secretary at the Hospital.

Hampstead General and North-West LONDON HOSPITAL, Haverstock Hill, N.W.—Appointment of GYNÆCOLOGIST.—Applications are invited for the appointment of Gynæcologist to the Hospital. Candidates must be Fellows of the Royal College of Surgeons, England, or Members of the Royal College of Physicians, London. Applications, stating age, qualifications, and experience, accompanied by copies of not more than three testimonials, should reach the Hospital not later than noon on July 16th. Further particulars may be obtained on application to the Secretary.

Royal Chest Hospital, City-road, E.C.

(Royal Northern Group of Hospitals.)

A vacancy occurs for a PHYSICIAN with charge of Outpatients. Candidates must possess the degree of M.D. or M.B. obtained by examination at a British University, and be Fellows or Members of the Royal College of Physicians of London.

Applications should be sent by the 15th July to the undersigned, from whom full particulars of the office and with regard to the submission of copies of testimonials, &c., may be obtained.

GILBERT G. PANTER, Secretary.
Royal Northern Hospital, Holloway, N. 7.

London Homœopathic Hospital,

Great Ormond-street and Queen-square,
Bloomsbury, W.C. 1. 172 Beds.

The Board of Management are prepared to receive applications, Male or Female, for the following appointment :—

ASSISTANT PHYSICIAN TO THE HOSPITAL.

The successful candidate must possess, or obtain, a registrable University Degree, and be, or become, a Member of the British Homœopathic Society. It is required that successful candidates for posts on the Honorary and Surgical Staff of the Hospital should show evidence of knowledge of the Theory and Practice of Homœopathy within one year of appointment by having attended one or more of the Systematic Courses of Lectures at the Hospital. Any candidates canvassing the members of the Board, Medical Council, or Medical Committee are thereby disqualified.

Candidates may be required to attend a meeting of the Medical Committee.

Applications, stating age, with copies of testimonials (thirty copies of each testimonial), should be sent addressed to the Secretary, of whom further particulars may be obtained.

June, 1924. EDWARD A. ATTWOOD, Secretary.

St. Bartholomew's Hospital Medical

COLLEGE.

DEMONSTRATOR OF PHYSIOLOGY.

Applications are invited for the post of Demonstrator of Physiology.

Particulars may be obtained on application to the Dean, St. Bartholomew's Medical College, E.C. 1, to whom applications with copies of testimonials, should be sent before July 12th, 1924.

23rd June, 1924.

Resident Medical Officer. — The Committee of Management of the HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, invite applications for the POST of RESIDENT MEDICAL OFFICER. Salary £500 per annum (including £100 as Registrar), with board and residence. Applications, with testimonials, to be sent in on or before Wednesday, 16th July, 1924. Candidates must be registered Practitioners and qualified in Medicine and Surgery, single, and not under twenty-five years of age.

Brompton, June, 1924. FREDERICK WOOD, Secretary.

Hospital for Consumption and DISEASES OF THE CHEST, Brompton, S.W.—The Committee of Management invite applications for the post of HOUSE PHYSICIAN (for which there are five vacancies). The duties include work in the Out-patient Department as well as in the Wards, and one of the selected candidates will also be appointed Assistant to the Tuberculosis Officer for the local Tuberculosis Dispensary at the Hospital. Applications, with testimonials, must be sent in not later than Tuesday, 15th July, 1924, addressed to the Secretary. The appointment is for six months, commencing on 1st August, with an honorarium of £50.

Brompton, June, 1924. FREDERICK WOOD, Secretary.

Calderstones (Certified Institution for MENTAL DEFECTIVES), Whalley, near Blackburn.—Wanted, ASSISTANT MEDICAL OFFICER, Male, under thirty years of age, single. Fully qualified and registered. Hospital experience and ability to Correct Errors of Refraction will be an advantage. Salary £300 per annum, plus a fluctuating bonus, which is at present £140 16*s.* 11*d.*, together with board, apartments, and washing. Applications, with copies of three recent testimonials, to be sent to the Medical Superintendent.

Wolverhampton and Staffordshire

HOSPITAL.
(Incorporated by Royal Charter.)

A HOUSE SURGEON wanted for 28th July. The Hospital contains 210 Beds, including the usual Special Departments, and is recognised by the various Examining Bodies for a part of the requisite attendance on Medical and Surgical Practice.

Candidates must be registered under the Medical Acts. The appointment is for six months, with a salary at the rate of £150 per annum, board, furnished rooms, and laundry provided.

Applications, with copies of testimonials, to the undersigned.

W. H. HARPER, House Governor and Secretary.
Wolverhampton, June 23rd, 1924.

Psychology.—Vacancy in Co-educational School for young unmarried Man with some capital wishing to study Psychology. Must be willing to take Chemistry and Physics and help with general school routine.—Address, No. 562, THE LANCET Office, 423, Strand, W.C. 2.

University of Hongkong.

FACULTY OF MEDICINE.

PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY.

Applications are invited, from duly qualified Medical Men of not more than thirty-five years of age who have had the requisite experience, for the Chair of Obstetrics and Gynæcology, endowed by the Rockefeller Foundation at the University of Hongkong.

The salary is £800 per annum, rising by annual increments of £25 to £1000 per annum, payable while in the Colony at 2*s.* to the dollar. In addition, an unfurnished house or house allowance of $150 per mensem will be provided. The University will also provide a first-class passage (P. and O.) for the successful candidate and his wife, if married, from London to Hongkong and will pay half sterling salary during the voyage to Hongkong. Similar passages will be provided on the termination of the appointment. The Professor will be allowed to take part in the University Superannuation Scheme. A limited consulting practice is permitted. Nine months' leave will be granted after four and a half years' service. A probationary period of three years will be required before permanent appointment. The selected candidate will not be required to arrive in Hongkong until early in 1925.

Applications for the post should be addressed to the Chief Medical Officer, Ministry of Health, Whitehall, London, S.W. 1 (from whom further details may be obtained), before the 25th July, 1924.

23rd June, 1924.

Blackburn and East Lancashire

ROYAL INFIRMARY.—THIRD HOUSE SURGEON (Male) wanted at a salary of £200 per annum, with board, residence, laundry, &c. The Hospital contains 160 Beds, with X-Ray and Massage Departments; V.D. Department; Pathological Laboratory; Eye, Ear, Nose and Throat Department, &c. Last year there were 1947 in-patient operations and 727 out-patient operations. There is no outside work.

Applications, with copies of testimonials, stating age, nationality, experience, &c., to be sent at once to the undersigned.

NATHAN A. SMITH, General Supt. and Secretary.

Royal Infirmary, Blackburn.

City of Birmingham Anti-Tuberculosis

SCHEME.—Applications are invited for the post of an ASSISTANT RESIDENT MEDICAL OFFICER (Male). Experience in the diagnosis and treatment of Tuberculosis in a recognised institution is essential. Preference will be given to those with experience in the treatment of Surgical Tuberculosis. Age should not exceed thirty-six years. Salary at the rate of £450 per annum, with board, residence for an unmarried doctor, and laundry. The person appointed will be required to join the Municipal Superannuation Scheme, for which a medical examination is required. The duties include both Sanatorium and Dispensary work. Application on form to be obtained from G. B. DIXON, Chief Tuberculosis Officer, Municipal Anti-Tuberculosis Centre, 44A, Broad-street, Birmingham, to be sent to him on or before 7th July, together with copies of three recent testimonials.

Derbyshire Education Committee.

SCHOOL MEDICAL OFFICER (SPECIALIST).

Applications are invited for the above position at a salary of £600 per annum, rising by annual increments of £25 to £800 per annum, together with travelling and maintenance expenses.

Special knowledge in diseases of the Ear and Throat are essential, and skill and experience in the Enucleation of Diseased Tonsils and Removal of Adenoids. Experience in Ionic treatment of ear disease is also desirable.

Particulars of duties and forms of application may be obtained from the undersigned, to whom they should be returned, filled up, together with copies of not more than three recent testimonials, on or before July 5th.

SIDNEY BARWISE, M.D., School Medical Officer.

New County Offices, St. Mary's Gate, Derby.

Manchester Royal Infirmary.

SECOND SURGICAL REGISTRAR.

The Board of Management of the Manchester Royal Infirmary invite applications for the above appointment, which will be vacant on 7th July, 1924.

Applicants must be registered and hold a Medical and Surgical qualification.

The appointment (non-resident) is for one year, renewable for a further period of one year, subject to the provisions of the Bye-laws as to notice.

Salary is at the rate of £150 per annum.

Applicants must state age, and address their applications and testimonials to the Chairman of the Medical Board by Saturday, 5th July, 1924. By order.

FRANK G. HAZELL, Gen. Supt. and Secretary.

17th June, 1924.

Richard Murray Hospital, Blackhill,

Co. Durham.

RESIDENT MEDICAL OFFICER.

Applications are invited for the post of Resident Medical Officer (Male or Female) at the above Hospital, which has accommodation for sixteen Maternity cases and sixteen Surgical and Medical cases. The salary offered is £400 per annum, rising by increments of £50 to £500 per annum, with board, apartments, and laundry in addition.

Candidates must be fully qualified and registered Medical Practitioners, unmarried, and between the ages of twenty-five and forty-five, with special experience in Midwifery, and preference will be given to candidates who have held an appointment in a General Hospital. The person appointed will be required to devote his or her whole time to the duties of the office, which will include the general medical control of the Institution under the direction of the Joint Board, and will be debarred from private practice, but will be required to undertake the medical supervision of an adjacent small Convalescent Home for mothers and young children.

The appointment is included in the Superannuation Scheme of the Durham County Council, and a deduction of 5 % will be made from the salary in accordance with the provisions of the Local Government and Other Officers' Superannuation Act, 1922, and the appointment will be subject to passing the medical examination in connection therewith.

The appointment will be terminable by three months' notice on either side.

Applications, marked "Resident Medical Officer," together with copies of three recent testimonials, must be received by the undersigned not later than the 14th July, 1924.

W. T. MCDERMID, Secretary to Joint Board.

Shire Hall, Durham, 23rd June, 1924.

Leeds Public Dispensary.—Wanted,

JUNIOR RESIDENT MEDICAL OFFICER. Salary £150 per annum, with board, residence, and laundry. Separate sitting-room. Applications, with copies of three recent testimonials, to be addressed to the Secretary to the Faculty, Public Dispensary, North-street, Leeds.

Coventry and Warwickshire Hospital,

Coventry. (241 Beds.)—JUNIOR HOUSE SURGEON (Male) wanted. Salary £130 per annum, with board, residence, &c. Candidates must be duly qualified and registered. Applications, stating age, experience, &c., and enclosing copies of recent testimonials, should be sent to the undersigned on or before July 8th. (Miss) R. HOOPER, Secretary.

The Gloucestershire Royal Infirmary

AND EYE INSTITUTION, Gloucester.—There is a vacancy for a PHYSICIAN on the Acting Medical Staff of this Institution. By the rules of the Hospital the Members of the Acting Medical Staff shall be duly registered Practitioners. Candidates should send in their applications, Diplomas, and testimonials under cover to the Secretary on or before Monday, the 28th day of July next. G. HURFORD, Secretary.

Gloucester, June 26th, 1924.

City of Bradford.—Medical Officer

required with some special knowledge and experience in Bacteriology, to act under the City Bacteriologist as Assistant at the Laboratory and in Hospital work.

Salary £600 per annum.

Forms of application may be obtained from the Medical Officer of Health, Town Hall, Bradford, and should be returned to him not later than 2nd July, 1924.

N. L. FLEMING, Town Clerk.

Town Hall, Bradford, 14th July, 1924.

Warneford, Leamington, and South

WARWICKSHIRE GENERAL HOSPITAL, Leamington Spa.—Wanted immediately, RESIDENT HOUSE PHYSICIAN, fully qualified and registered.

Salary at the rate of £150 per annum, with board, residence, and laundry.

Applications, stating age and experience, accompanied by not more than three recent testimonials, should be sent at once to the undersigned.

W. RUSSELL RUDALL,
House Governor and Secretary.

June 23rd, 1924.

The Liverpool (Shaw Street) and

SAMARITAN HOSPITAL FOR WOMEN.

The coördinated Committees of the above invite applications for the appointment of HONORARY ASSISTANT SURGEON.

Candidates must hold the Fellowship of the Royal College of Surgeons, England, Edinburgh, or Ireland, or a Master of Surgery degree of a recognised University of the United Kingdom.

Candidates should submit this application on or before Tuesday, July 1st, 1924, to F. J. KIRBY, Hon. Secretary.

Samaritan Hospital, 5, Cook-street, Liverpool.

Bracebridge Mental Hospital, near

Lincoln.—Male SENIOR ASSISTANT MEDICAL OFFICER required. Salary £350, rising by annual increments of £25 to £425 per annum with £50 additional to those possessing or obtaining D.P.M., board, lodging, washing, and attendance provided. Candidates, whose age must not exceed thirty-five, must be fully qualified and registered Medical Practitioners, and have had previous experience in a Mental Hospital.

Applications, with copies of not more than three recent testimonials, to be sent before the morning of Wednesday, July 9th, to H. E. PAGE, Esq., Clerk to the Visitors, Bank-street, Lincoln.

Northampton General Hospital.

The Board of Management invite applications for the post of SECRETARY-SUPERINTENDENT. Salary commencing at £400 with residence, fuel, and lighting. Candidates must not be under thirty nor over forty-five years of age. Previous Hospital experience essential. Apply, stating age and experience, with copies of testimonials, not later than 18th July, to the undersigned, from whom full particulars of the appointment can be obtained. Personal canvassing will disqualify.

C. S. RISBEE, Secretary-Superintendent.

25th June, 1924.

Croydon Mental Hospital, Upper

Warlingham, Surrey.—Lady DISPENSER wanted. Must be fully qualified, and one with a knowledge of Photography preferred. Age not to exceed thirty years. Salary commencing at £120 per annum, rising by annual increments of £20 to £180, together with board, lodging, and washing, which are at present valued £72 9s. for Superannuation purposes.

Apply at once to the Medical Superintendent, stating age, qualifications, and enclosing copies of two recent testimonials with photograph.

University of Melbourne,

Victoria, Australia.

CHAIR OF PATHOLOGY.—PRELIMINARY ANNOUNCEMENT.

The Agent-General for Victoria has received a cablegram from the Council of the University of Melbourne advising that they are inviting applications for the Chair of Pathology up to the 20th September next. Salary £1200.

A further announcement will be made upon receipt of further particulars in regard to this appointment from Melbourne.

Countess of Dufferin's Fund.

WOMAN'S MEDICAL SERVICE FOR INDIA.

Medical Woman required September as LECTURER IN PHYSIOLOGY for the LADY HARDINGE MEDICAL COLLEGE, Delhi. Teaching experience in subject essential. Emoluments Rs: 750 p.m., rising, furnished quarters, provident fund. Passage and outfit allowance.

Applications on prescribed form (sent on written request), with copies of three recent testimonials, should reach the Honorary Secretary, U.K. Branch, Dufferin Fund, c/o Major-General J. B. Smith, India Office, Whitehall, S.W. 1, not later than July 18th.

Senior Medical Officer required for GILBERT AND ELLICE ISLANDS COLONY. Salary £650 per annum, rising by annual increments of £25 to £750 per annum.

Free quarters, partly furnished, provided, and free passages for officer, wife and children, not exceeding five passages in all. Post is pensionable.

Candidates should be between twenty-five and thirty-five, with good Medical qualifications and some operating experience. There are opportunities for original work and a taste for research is desirable.

Intending applicants should write to the Private Secretary (Appointments), Colonial Office, S.W. 1, who will furnish them with application forms and further particulars.

Wanted by large Company for their Eastern Staff an unmarried MEDICAL OFFICER, age not exceeding thirty-five years. Liberal terms will be offered to suitable candidates. Full particulars of school and college training and Hospital and other experience, together with professional references, should in the first instance be sent to Box No. 419, Shaw & Blake, Ltd., 8, Bell Yard, Temple Bar, W.C. 2.

Wanted, capable qualified Clinical PATHOLOGIST for a Laboratory in West End.—State qualifications, experience, and essential particulars, to No. 560, THE LANCET Office, 423, Strand, W.C. 2.

Wanted, well-qualified Medical Officer for Private Institution that is being started in West End to make a speciality of Ultra-violet and other Rays in the cure of disease. Able to put in several hundred pounds. Receive third of profits. Unique opportunity for ambitious man with means. Splendid prospects. Send credentials, but early interview imperative.—Address, No. 558, THE LANCET Office, 423, Strand, W.C. 2.

Wanted, Assistant with view to Partnership, South Coast Town (Sussex). Must be capable Surgeon, preferably F.R.C.S.—Give full details to No. 555, THE LANCET Office, 423, Strand, W.C. 2.

Locum Tenens Provided

WITHOUT FEE TO PRINCIPALS.

Apply to

Mr. W. S. ATKINS,

43, Bedford-street, Strand, W.C. 2.

Telegraphic Address: "Positions, Westrand, London."

Telephone: Regent 229.

Medical Men, possessing their own Bacteriological and Pathological Laboratories, can obtain trained, efficient, and experienced Women Laboratory Assistants who are also legally qualified Dispensers. Preparation for Examinations.—Apply, London College of Pharmacy, 7, Westbourne Park-road, W. 2.

Locum Tenens Provided

at short notice.

Apply to Mr. PERCIVAL TURNER,

the oldest and only Agent for forty years, *without agency fee to Principals*, has supplied Practitioners with reliable substitutes.

4 & 5, ADAM STREET, ADELPHI, STRAND, W.C. 2.

Telegrams: Epsomian, London. Telephone: Gerrard 399.

After [illegible] P.M.—Tel. Epsom 335.

Travelling Salesman, calling on Doctors and Hospitals in Pennsylvania, U.S. America. desires Agency for Surgical Instruments and Kindred lines.—Write, Box X 100, "Advertiser" Office, Stockport.

Oxford Graduate desires to purchase good-class PRACTICE in London, or a Share in such practice.—Address, No. 534, THE LANCET Office, 423, Strand, W.C. 2.

Wanted, Country or Country Town PRACTICE or PARTNERSHIP yielding £1000 a year or more. House to be rented. Necessary capital available.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2. (No charge unless sale effected.)

Required at once, Practices and PARTNERSHIPS.—Mr. W. S. Atkins (late of Arnold & Sons, London) has a large number of Clients who are seeking Practices and Partnerships, and wish to settle down at once.—Send full particulars, in confidence, to Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, W.C. 2.

Exchange of Practices for a month desired by M.D. (Lond.) in tourist district of N. Wales (English speaking). All sports. Near Sea. Modern house. accommodate five; garage. London or S. Coast preferred.—Address, No. 508, THE LANCET Office, 423, Strand, W.C. 2.

To Purchasers.—Do not buy any Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Forty years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases. Terms and full particulars free on application to 4, Adam-street, Adelphi, Strand, W.C. 2. Telephone: 399 Gerrard. Telegrams: Epsomian, London.

Death Vacancy. — £1000 a year. Favourite Riverside Resort. Very old established. Same hands over thirty years. Small and select panel. Night work mostly refused. Good house, with garage and garden, on lease. Excellent opportunity for prompt purchaser. Personally known and recommended.—Apply, No. 7556, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

General Medical and Surgical PRACTICE for Sale. In same family over 60 years. North Midlands, near Cathedral City. Gross fees, general, panel, and appointments, over £1100. Suitable for Practitioner fond of Surgery. Holder of D.P.H. would have an advantage. Price, with house and garage, £2650, or without house £1650. No agents. Short details will be furnished to bona-fide applicants only, followed by interview.—Write, No. 561, THE LANCET Office, 423, Strand, W.C. 2.

South Africa.—Practice for Sale at Westminster, 60 miles from Bloemfontein. Established 1903. Income about £1200 per annum, including Railway appointment, carrying privileges and concessions. 5380 feet above sea-level. Excellent climate, particularly suited to sufferers from bronchial and pulmonary troubles. No opposition within twenty miles. Also house containing two reception, six bedrooms, bathroom, &c., and separate surgery, consulting-room, garages for two cars, laundry, 39 acres gardens, paddock, and plantation. Abundant water, electric light, 'phone. One mile from station, stores, and excellent Government school. £7000.—For further particulars apply, Johnson, Jecks, and Colclough, Solicitors, 24, Austin Friars, E.C. 2.

For Disposal.—A really good Practice is not always to be had directly, but Mr. PERCIVAL TURNER (with forty years' personal experience) can generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best practices are sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C. 2.

For Sale.—(1) Practice in Western (City) Spa (£1800 p.a.). House (7 beds.). £3100.
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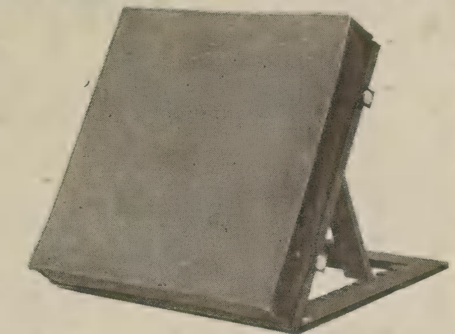

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